Identifying the critical factors that impact on the Development of Electronic Government using TOE Framework in Saudi E-Government Context: A Thematic Analysis

A thesis is submitted in partial fulfilment of requirements for the degree of Doctor of Philosophy

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Abstract

Background: Electronic government (e-government) systems are important across several dimensions, such as the public sector, business sector and the government itself, via the various organs of government. Hence, e-government systems consist of numerous factors, which play various roles in the success of e-government development and adoption. The most important factors from derived from dimensions that impact on the development, implementation and adoption of e-government which are technological, organisational, environmental, and social, also it is intended for and the government decision-makers involved. Therefore, the government of Saudi Arabia is seeking to improve its electronic services (e-services) and so this topic was attractive for the researcher, who in turn, has attempted to make a research contribution to the integration of an e-government system in the context of Saudi Arabia (SA).

Aims and Objectives: The aim of this research was to identify insights into the critical factors revealed in a review of the relevant literature. The Literature Review shows that there have been few studies that have considered the critical factors in the development of e-government systems. This thesis is taking into account the experiences of senior government IT staff and the citizens such a system is intended to serve. To present a theoretical understanding of e-government development that based on Technology-Organisation-Environment TOE framework. Consequently, a conceptual framework for the successful development and adoption of e-government was subsequently proposed to improve government services in general and make savings in terms of time, cost and promote the e-services.

Methods: Qualitative research data were gathered via 26, in-depth semi-structured interviews from two perspectives: first, from the point of senior IT managers view at four Saudi Ministries and second, from the standpoint of 10 Saudi citizens (five men and five women). Thematic analysis was carried out to identify the critical factors that derived technological, organisational, environmental and social dimensions which influencing e-government development in the Saudi context. Moreover, to highlight the issues to be taken into account when endeavouring to support e-government development in Saudi Arabia's Ministries.

Results: This research makes a significant contribution to understanding e-government development, as it essentially identifies the critical factors that should be targeted by the Saudi government in its efforts to develop e-government. This study therefore brings together these various factors into a single comprehensive conceptual framework, comprising the main elements to be considered when attempting to identify, improve and motivate e-government system development. This is based on the perspectives of senior government IT managers in Saudi Ministries and the intended system users, namely the Saudi public. As a theoretical basis (TOE) Framework was applied and extended to the topic of e-government system development.

Conclusion: This research explains how the critical factors identified through the application of the TOE Framework plus the examined social dimension can be worked into the Saudi government's decision-making, as it provides valuable information for decision-makers in Saudi Arabia's Ministries about what needs to be consider, thus enhancing the development of e-government nationwide.

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Dedication

I dedicate this thesis to those who have supported, encouraged and consistently loved me:

To my father and mother,

my Wife

and to my children

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List of Abbreviations

AIS	Accenting information system
BPR	Business Process Re-Engineering
CAATs	Computer assisted auditing techniques and tools
CITC	Communications and Information Technology Commission
CRM	Customer Relationship Management
DOI	Diffusion of Innovation
E-Business	Electronic Business
E-Commerce	Electronic Commerce
EDI	Electronic Data Interchange
E-Government	Electronic Government
E-Law	Electronic Law
E-Participation	Electronic Participation
E-Payment	Electronic Payment
E-System	Electronic System
ERP	Enterprise Resource Planning
GCC	Gulf Corporation Council
GDP	Gross Domestic Product
G2G	Government to Government
G2C	Government to Citizen
G2B	Government to Business
G2E	Government to Employee
ICT	Information and Communication Technology
IT	Information Technology
KSA	Kingdom of Saudi Arabia
MOMRA	Ministry of Municipal and Rural Affairs
MCIT	Ministry of Communications and Information Technology
MOE	Ministry of Education
MOF	Ministry of Finance
MOH	Ministry of Health
MOI	Ministry of the Interior
OPEC	Organisation of the Petroleum Exporting Countries
ROI	Return On Investment
SAR	Saudi Arabia Riyal
SCM	Supply chain management
SME	Small and medium – sized enterprises
THIS	Total hospital information system
TOE	Technology Organisation Environment
TOE-S	Technology Organisation Environment Social
TPB	Theory of Planned Behaviour
NTP	National Transformation Program
UK	United Kingdom
UN	United Nations
USA	United States of America

Chapter 1: Introduction

1.1 Motivation

The global advent of information and communication technology (ICT) has brought with it a new concept of 'informatics'. Substantially, ICT has influenced the range of electronic services (e-services) available for enabling electronic government (e-government) systems (Virkar, 2013). E-government can play a key role in both public and private sectors, as well as in government bodies, due to its efficiency and effectiveness in providing high quality e-services. Numerous researchers such as (Al-Fakhri et al., 2008; AlSobhi et al., 2009; Alshehri et al., 2012; Alateyah et al., 2013; Alsaif, 2013; Albesher, 2016) have already studied user acceptance, privacy, and behaviour in relation to Saudi e-government. Critical perceptions of the concept have influenced the ways in which this new framework has been developed and implemented so far, thus impacting on the nature of the relationship between citizens, politics and the public sector in Saudi Arabia (Alateyah et al., 2013; Alsaif, 2013; Albesher, 2016).

Aldhabaan (2012) points out that Saudi Arabia's efforts to establish an e-government system are largely concentrated in the main cities in the Kingdom of Saudi Arabia (KSA); for example, its capital, Riyadh and Medina. Moreover, the long distances between Saudi Arabia's main cities, such as Riyadh, Jeddah and Dammam, hinder communication and interaction between local authorities (Alomari et al., 2014). However, AlSobhi's (2009) analysis of e-government in Medina identifies various obstacles facing the successful implementation of e-government in that context. For instance, according to a recent report on world Internet usage and population statistics (World Factbook, 2016), the total population of KSA totals 28,160,273 (July 2016 EST) million and in 2014, approximately 19.6 million individuals had Internet access. In spite of the phenomenal increase in the number of Internet users - from just one million in 2001, with a population penetration of around 0.5%, to a population penetration of around 54% revealed in a UN survey in 2014 - there are still needs in the adoption, implementation and utilisation of e-government services in the country (CITC, 2014). Therefore, it clearly shows how big the country of Saudi Arabia to meet a huge requires for e-services.

This research embarks on further exploration for problem, on-going challenges and obstacles related to and influencing the successful development of e-government, as view of government employees and Saudi citizens. Moreover, it proposes a conceptual framework for developing an integrated e-government system, with the potential to provide an understanding to support the development and adoption of e-government services by addressing multi-disciplinary factors. This research and its anticipated outcomes will consequently be of appreciable benefit to the government of Saudi Arabia, and its efforts to develop an e-government system, which would then help resolve bureaucratic issues between the government and its public servants and business sector, also among the government itself bodies. The motivation for this study was therefore an emerging need to consider the context of Saudi e-government in relation to the critical factors influencing e-government system development and adoption. Ultimately, e-government is believed to have the potential to improve overall quality of life for user. This thesis will thus contribute to existing knowledge by identified the factors the influence on e-government, also to propose a conceptual framework that can helps the development of a specific e-government system for the Saudi Arabia context. Finally, this thesis will explain how the conceptual framework developed can work towards the adoption and development of e-government, thereby filling the gap in the literature on e-government development in Saudi Arabia, while also making recommendations for future academic consultation and suggestions for further relevant research.

1.2 Research Background

Governments around the world are facing serious long-term deficits as they endeavour to respond to rising demands for better quality e-services in the public sector, in order to meet the changing needs of users. In addition, local authorities are under pressure to rebuild and sustain democratic legitimacy (Jones and Crowe, 2001). This requires a move away from traditional administrative ways of working, to a more flexible ‘marketing’ approach. Coupled with this is the public’s increased expectation of high levels of service, acquired through their experience of services they enjoy as consumers.

As a result, the move towards e-government represents a fundamental transformation of government, such as has not been seen since the start of the Industrial Revolution

(Bentley and Wilsdon, 2003). Number of governments are placed at the centre of social and economic activity: developing, attracting, facilitating, investing and supporting E-Systems. As a result, the current profile of Saudi Arabia's e-government in various areas of e-system development urgently requires investigation (Bakry et al., 2016). The nature of such a development process is elevated due to its sensitivity and the pressing needs of the government as a whole, as well as of businesses and individual users. Moreover, the development process could be improved, so that such systems are able to fulfil a vital role in developing interaction between the general public and the government (Tolbert and Mossberger, 2006).

This research addresses several issues arising in the development of e-government systems in KSA. Such services support development processes for strategic projects, aligned with global e-government systems through ICT. Therefore, ICT itself is a key factor in the activities enabled by new technologies and is crucial to an examination of the technological, organisational, environmental and social issues that impact e-government development and adoption.

1.3 Significance of the Term 'Development'

The term 'development' can have several different connotations when applied to ICT (Heeks, 2006). Heeks (2010) argues that 'ICT4D', or ICT for development requires the application of theory and evidence of its effect on ICT development. Meanwhile, Sahay and Walsham (2017) emphasise the theoretical challenge posed by ICT innovation in its objectives for socio-economic development. As an example, they cite technical implementation, which is the final stage of developing an information system (IS). This is potentially linked to relevant social, technology, organisational and other human issues. Hence, this thesis uses the term as defined by Sahay and Walsham (2017), namely as the process of ICT development, with specific reference to e-government systems.

1.4 Significance of the Term 'Framework'

The term 'framework' has been defined in many different ways and for multiple purposes. The Oxford English Dictionary explains "as the abstract, logical structure of meaning that guides the development of the study. All frameworks are based on the

identification of the key concepts and the relationship among those concepts". In research the frameworks can serve a whole range of purposes and are frequently represented as conceptual, theoretical or literary review frameworks (Ravitch and Riggan, 2016). Moreover, Ravitch and Riggan (2016) define conceptual frameworks as "an argument about why the topic one wishes to study matters, and why the means proposed to study it are appropriate and rigorous". In the current thesis, the term refers to the theoretical framework, which aggregates and formalises the theoretical bases of the study. This then illuminates the critical factors for formulating an appropriate conceptual framework to facilitate the development and adoption of an e-government system.

1.5 Statement of the Research Problem

This research proposes a design for a conceptual framework to promote the development and adoption of an e-government system, which could be applied by the government of Saudi Arabia in its Ministries and government organisations, as well as in the public sectors. Saudi Arabia requires a particular development process, in order to be able to gain the full benefit of an e-government system, regardless of global access to such e-government (Saudi vision 2030). In broad terms, there is a gap reported between the developed and developing world in terms of e-government systems and e-services (Venkatesh et al., 2014; Bakry et al., 2016). In fact, Saudi Arabia is a rapidly developing nation, particularly in terms of its e-government systems and ICT. However, even in advanced nations, such rapid development. With regard to Saudi Arabia's public and private sectors, e-government remains a new area requiring further development. Here, only a few previous studies may be noted in the literature on Saudi Arabia; for example, Al-Fakhri et al. (2008), Alfarraj et al. (2012), Alshehri et al. (2012), Alateyah et al. (2013), Alghamdi and Beloff (2016), Alateyah et al. (2014), and Alghamdi et al. (2014). Moreover, Al-Ghaith et al. (2010) has identified the privacy and compatibility factors influencing e-services in the Saudi context.

In more general terms, several critical factors have been identified as influencing users' perspectives of Saudi Arabia's e-government, such as acceptance, trust, privacy, technical factors and reliability (Al-Sobhi et al., 2010; Alsaif, 2013). Additionally, some existing e-government adoption models may be unsuitable for the Saudi context, since

they depend on a specific ICT and organisational infrastructure (Alghamdi et al., 2011), as well as on an appropriate social, economic, cultural, political and legal framework.

In addition, Al-Shehry (2008), Altameem (2007) and Alfarraj (2013), have studied e-government in the Saudi context in qualitative investigations. Alfarraj (2013) identified the factors influencing the adoption of e-government from the perspective of developers of the Yesser Program, as well as from the point of view of IT academics and Al-Elm Company employees, who work on e-government projects and are responsible for the adoption of e-government in Saudi Arabia. Al-Shehry (2008) also conducted an empirical study on how e-government could be adopted in Saudi Arabia, thus identifying two key issues: technological and organisational.

In order for this current research to be able to help address the above issues, thus contributing to the e-government development process, it must first identify and analyse the critical factors influencing e-government. As a result, an existing research gap is likely to be filled by identified a thus factors from both governmental IT staff and user perspectives, consequently, proposes a conceptual framework for the development and adoption of an e-government system in Saudi Arabia. Finally, it proposes specific keys to help develop and improve Saudi Arabia's existing e-government systems. There is not any previous studies on e-government development and adoption from the point of view of senior government IT staff and Saudi citizens and in relation to four crucial aspects of the development and adoption of e-government, examined the technological, organisational, environmental and social dimensions. In order to develop an effective conceptual framework to foster e-government development in the light of Technology Organisation Environment (TOE) Framework which was applied and embedded, while being extended to accommodate social characteristics and make a distinct contribution.

1.6 Aims and Objectives of the Research Study

The main aim in this study is to identifying critical factors for the Saudi government that base on the TOE framework. It will consequently provide guidance for decision-makers, as they attempt to formulate appropriate decisions for e-government. To meet the specific aims of this research, the following objectives are thus outlined:

1. To review the specific impact of developing and adopting an e-government system in Saudi Arabia.
2. To review and explore the critical technological, organisational, environmental and social contexts derived from a review of the literature, which influence the development and adoption of e-government systems worldwide and more specifically, in Saudi Arabia.
3. To investigate the factors that derived from the perspectives of senior IT managers at Saudi Ministries and the Saudi public in the e-government development and adoption.
4. To propose a conceptual framework for e-government development.

1.7 The Research Questions

In terms of meeting the research aims and objectives, the research questions were formulated as follows:

What are the most important factors that impact on the development of an e-government system in Saudi Arabia context?

In order to address this main research question more effectively, a series of sub-questions were also formulated:

1. Why Saudi Arabia?
2. What is the definition of e-government?
3. What are the perspectives of senior IT managers in Saudi Arabia's government Ministries?
4. What are the perspectives of users in Saudi Arabia's public sector about the e-government?

To answer these questions, the researcher will need to gain a deep understanding of the relevant critical factors influencing e-government development in Saudi Arabia.

1.8 Significance of the Research

As clarified above, the main concern in this study is the development of e-government to facilitate information exchange, establish computer networks- primarily via the

Internet - and conduct e-service transactions. E-government also supports contact between the government and citizens or residents of a country. These features define the adoption of an e-government system and four options are presented in this regard: government to government (G2G), government to business (G2B), government to citizen (G2C), and government to employee (G2E). E-government could moreover be defined as encompassing activities ranging from initial steps; for example, establishing and maintaining ICT infrastructure, computer networks, Web browsers, a national portal, email facilities and websites, as well as more intricate procedures, such as providing online services, enabling online payment, delivering services to order, and offering e-services and other facilities (Al-Fakhri et al., 2008; AlSobhi et al., 2009; Alshehri et al., 2012; Alateyah et al., 2013; Alsaif, 2013; Albesher, 2016).

The revolution in advanced ICT use, such as the integration of e-government systems into the public sector, has been revealed in various other studies, whereby experts have seen the benefits of e-government in Saudi Arabia (for example, Bakry et al., 2016). Therefore, this thesis contributes to the literature on e-government development and adoption in Saudi Arabia by highlighting the technological, organisational, environmental and social contexts by examine the critical factors influencing on e-government development and adoption. Moreover, it brings the existing factors into more focus and extends it by propose conceptual framework. In applying and rationally evaluating the findings of this thesis. The findings will helps the decision makers to consider thus factor in such new development process.

1.10 Thesis Outline

This study contains nine chapters, as shown in Figure 1.1. The Introduction in Chapter One, and the Literature Review and Theoretical Background in Chapter Two, seek to establish a sound understanding of e-government system in Saudi Arabia context. Chapter Three presents a wilder literature review in e-government adoption, implementation, diffusion and development. Chapter Four reviewed and presented the TOE framework and summarising the previsedstudies that examined the TOE framework, than reviews the critical factors based on the TOE-S contexts which influencing e-government adoption, while Chapters Five a general overview of the relevant research methodologies. Chapter Six analyse the data collection, and Chapter Seven discusses the research findings. Chapter Eight subsequently presents the thesis findings from different theoretical positions, in order to design an appropriate conceptual framework, while Chapter Nine makes recommendations and suggestions for further work, ultimately drawing conclusions from the current study.

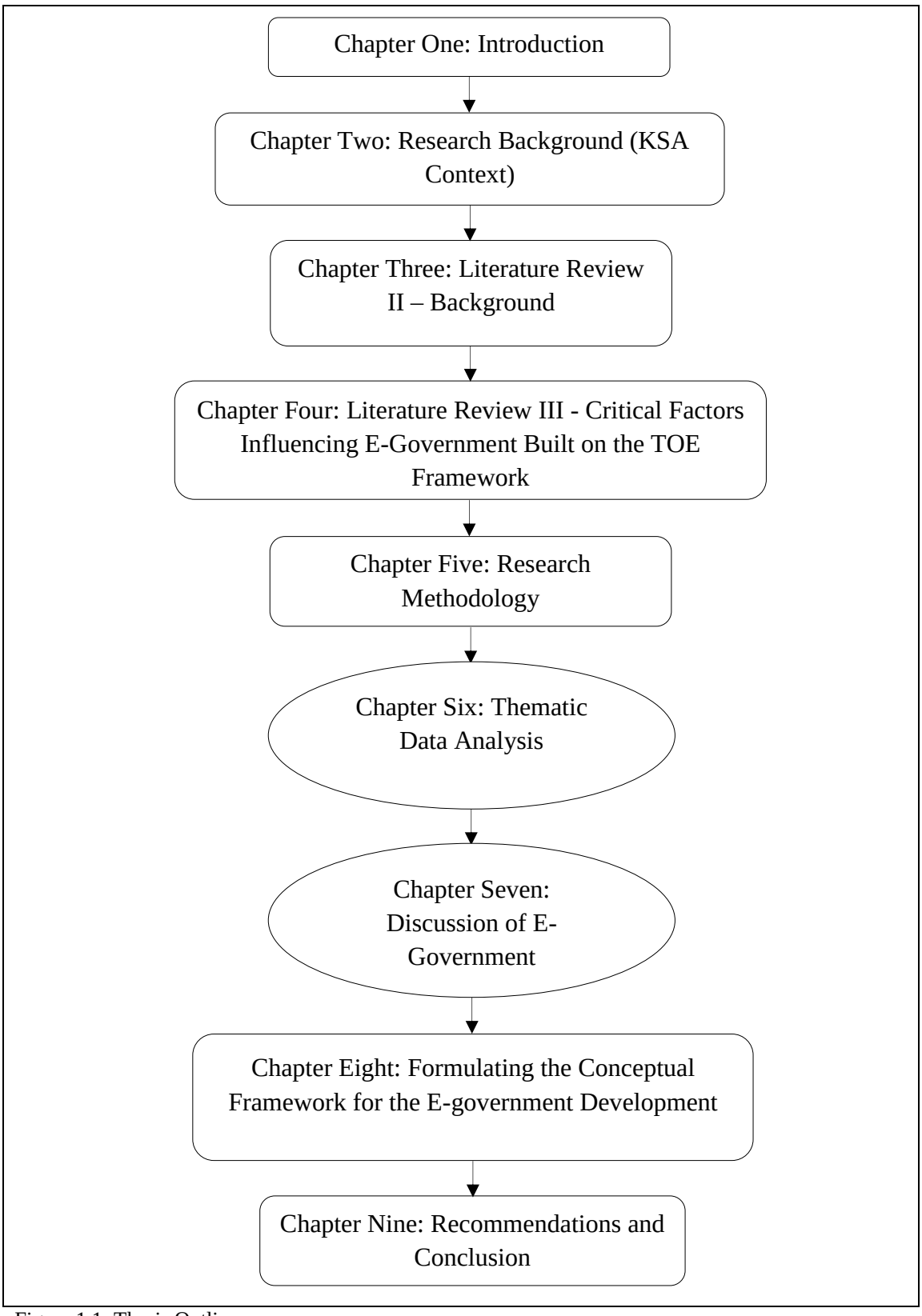

Figure 1.1: Thesis Outline

1.11 Summary

This chapter provides some background on the specific research context, as well as general background information. It explains the research motivation in terms of Saudi Arabia and its ICT development and initiatives, since this represents the research context. The research statement then gives an overview of the research problem, as well as the research aims, objectives and questions. The research methods are also briefly discussed, with an outline of the thesis being presented towards the end of the chapter. This chapter provides justification of the significance of the research and an outline of the thesis itself, by stating the general content of each chapter.

The following chapter will now go into more detail about the research background (the Saudi context) and give an overall picture of Saudi Vision 2030. In addition, it will describe the Yesser Program (Yesser, 2016) and other current e-government projects, the benefits of e-government systems in general, and the barriers and challenges to e-government development in Saudi Arabia.

Chapter 2: Literature Review I - Research Background

2.1 Introduction

In the One chapter, the research motivation, research background and research problem were explained, in addition to the research aims, objectives and main questions. Moreover, the thesis as a whole was outlined. This current chapter will now investigate the contemporary phenomenon of e-government against the backdrop of Saudi Arabia (the research context), by presenting a profile of Saudi Arabia (its location, economy, culture, demography and population), as well as its ICT status (Internet statistics). In addition, the current Yesser e-government project will be introduced, with a description of the benefits of e-government systems and the accompanying barriers and challenges to developing them, especially in Saudi Arabia.

2.2 Why the Kingdom of Saudi Arabia (KSA)?

This section explains the researcher's reasons for choosing Saudi Arabia as the research context, by briefly outlining its location, economic status, culture, demography and population. Saudi Arabia is the birthplace of Islam and as such, hosts Islam's two most sacred monuments, located in Makkah and Medina. The custodian of the Two Holy Mosques is in fact the Saudi King's official title. Historically speaking, after a 30-year campaign to merge most of the Arabian Peninsula, King Abd Al-Aziz bin Abd Al-Rahman Al Saud (Ibn Saud) founded the modern state of Saudi Arabia in 1932. Today, the country is ruled by one of his male descendants, as required by the country's Basic Law. In January 2015, King Salman bin Abd Al-Aziz succeeded to the throne. Just like many other developing nations, rapid financial, social and demographic change has been experienced in KSA and it is still a relatively young nation. With respect to its geographic location, demographic profile and population, telecommunications and economy, the objective of this section is to provide some general facts about the country.

2.2.1 Location

Saudi Arabia lies at the intersection of Asia, Africa and Europe in south-west Asia. The Red Sea is to the west of the Kingdom, while its southern side borders on Oman and the Yemen. Its eastern side runs alongside the Arabian Gulf, Qatar and the UAE, while its northern edge is adjacent to Iraq, Kuwait and Jordan. Saudi Arabia is the largest country on the Arabian Peninsula, with the biggest population out of the six Gulf Cooperation Council (GCC) nations in the Middle East, occupying four-fifths of the Arabian Peninsula.

The potential rewards of e-government for a developing country like Saudi Arabia are vast, especially given its surface area and population. It occupies an area of 2,150,000 km^2 (around 830,000 square miles) (Mep.gov.sa, 2015). Therefore, the distances involved often impede citizens from travelling to the offices of local authorities when they need to access necessary services, as it is still relatively time-consuming to travel to central government departments in the nation's capital from other regions (Al-Shafi and Weerakkody, 2007). Therefore, while reducing the need for the physical contact and presence of citizens, which traditional services involve, advancement could be brought about by an e-government system. Since Saudi Arabia extends over a vast surface area and has a large population, adequate e-services would be required to meet the demands of its citizens. Finally, ICT adoption and usage would help reduce the costs incurred by traditional government service provision (Al-Fakhri et al., 2008).

Although there have been a number of previous studies that have investigated the topic of e-government in relation to Saudi Arabia, very few of these have been concentrated on the development of e-government system to ensure that national strategic government objectives are met. Therefore, this thesis looks at identifying and proposing a conceptual framework to facilitate the establishment of e-government system in Saudi Arabia. As mentioned earlier, the size of the surface area of KSA renders the provision of e-services high priority in every city and village across the entire country.

Figure 2.1: Map of Saudi Arabia
(Source: Saudibusinessonline.org, 2014)

2.2.2 The Economy

In the west of Saudi Arabia, the mountains are very rich in minerals, but over half the total surface area of the country is desert. Meanwhile, the richest oil reserves in the world are to be found in Saudi Arabia's eastern region. Moreover, as mentioned earlier, Islam's two holiest sites are located in Makkah (Mecca) and Medina. As a result, KSA occupies a unique position in the Islamic and Arab world.

Across its main financial activities, strong government controls are to be observed in Saudi Arabia. It is in fact one of the world's richest oil-based economies, of significant importance in the Organization of Oil Exporting Countries (OPEC). It is ranked as the largest petroleum exporter worldwide and possesses around 16% of the world's proven petroleum reserves. Approximately 45% of its GDP, 80% of its budget revenue and 90% of its export income are in fact underpinned by the petroleum sector. Nevertheless, for the employment of more Saudi nationals and to expand its economy, the growth of the private sector is being encouraged and appreciated in Saudi Arabia, with telecommunications, power-generation, the petrochemical sector and natural gas exploration being among the industries developed (Meim.gov.sa, 2016).

More specifically, within the oil and service sectors, Saudi Arabia's economy is currently uplifted by the efforts of more than six million foreign workers, although attempts are being made to reduce unemployment amongst Saudi nationals in the nation's capital, Riyadh. Saudi's large youth population, often lacking technical skills and education, is being targeted by the Saudi Arabian government for employment across the private sector. In terms of education and job training, spending has therefore been considerably increased in Riyadh, with the launch of the new King Abdallah University of Science and Technology (KAUST), which is Saudi Arabia's first co-educational university. In different regions of the country, six 'economic cities' were planned for the promotion of foreign investment between 2010 and 2014, whereby the government earmarked $373 billion for social development and infrastructural projects to boost the Kingdom's economy (Cia.gov, 2014). Based on the state of the Saudi economy and the fact that Saudi Arabia spends a large proportion of its budget on internal development, this thesis presents its National Transformation Program (NTP) in section 2.3.1. This is an important step for enhancing and supporting e-government projects.

2.2.3 Population and Culture

In 2013, Saudi Arabia had a total estimated population of approximately 20 million Saudi nationals (10,181,018 males and 10,090,040 females), with an estimated population of non-Saudi residents amounting to nine million (6,643,278 males and 3,079,936 females).

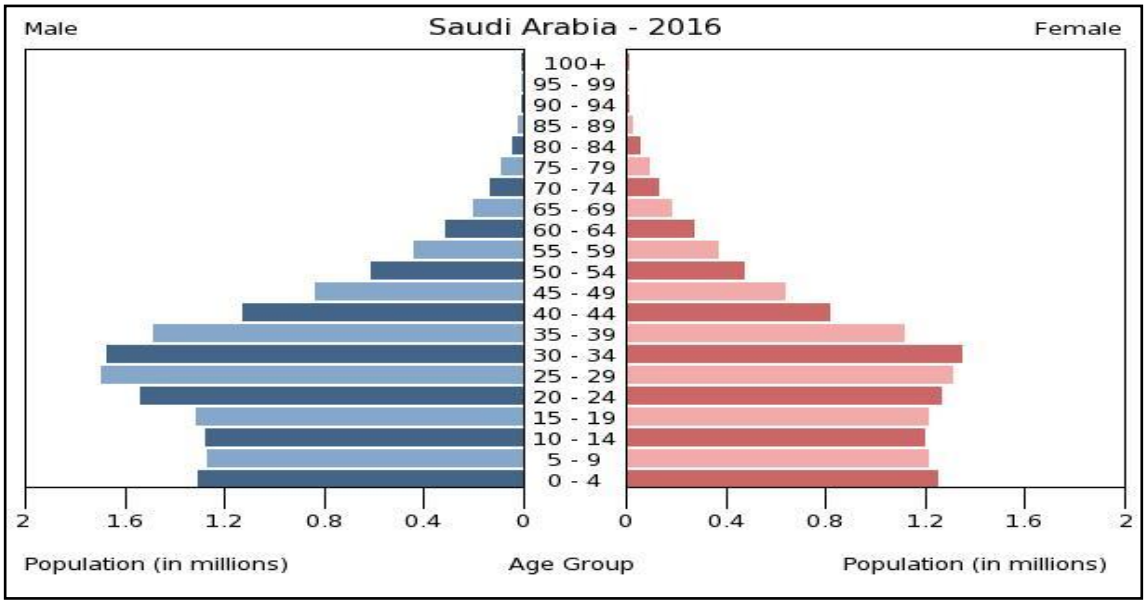

Figure 2.2: Population pyramid for Saudi Arabia
(Source: World Factbook, 2016)

Regarding age structure, the highest percentage of the population of Saudi Arabia during the period 2004-2013 (illustrated in Figure 2.2) were aged 25-34 years. 85.12% of this population had completed or were currently receiving education at various levels (for example, primary, intermediate, secondary or High School, diploma courses, undergraduate degree, Master's degree or PhD). The highest percentage of the population had received education to the equivalent of High School, at 32.65%, followed by holders of a bachelor's degree, at 19.76% (see Table 2.1).

Table 2.1 Educational level of the Saudi population

Population (15 Years And Over) By Age Groups And Educational Status : 1434 H / 2013 D

Age Groups	Educational Status Or Highest Certificate									
	Illiterate	Read Write &	Primary	Intermediate	Secondary Equivalent	Pre-Univ Diploma	Bachelors University	Master High Dip	Ph. D	Total
15 - 19	14850	32223	424529	1493078	547998	0	0	0	0	2512678
20 - 24	23228	57906	114654	270002	1571391	102138	240348	539	0	2380206
25 - 29	35289	112472	210038	372719	931842	186013	632162	14852	888	2496275
30 - 34	52073	196394	356170	562370	827514	166317	707327	28231	2406	2898802
35 - 39	78100	291119	475268	605613	697956	155385	631116	30210	14244	2979011
40 - 44	95697	290247	405934	479612	486659	102406	450504	32423	17183	2360665
45 - 49	106098	240962	305628	340265	329425	73515	283545	19325	19912	1718675
50 - 54	115641	210526	235035	204351	185911	43404	180774	20245	12493	1208380
55 - 59	117439	167236	180533	113808	96085	26286	110957	11406	11607	835357
60 - 64	117904	140215	83531	65038	48464	13313	50108	4753	5063	528389
65 - 69	115905	72213	47555	24535	26074	5458	15997	2897	2459	313093
70 - 74	109742	51675	28713	12856	9924	3689	5683	1059	1068	224409
75 - 79	71352	29154	10536	5506	3267	1033	2618	562	619	124647
80 +	102693	39471	9029	5425	2260	470	682	0	0	160030
Total	1156011	1931813	2887153	4555178	5764770	879427	3311821	166502	87942	20740617

(Source: Cdsi.gov.sa, 2014)

Every country, even region, has its own culture and traditions. Saudi culture is basically characterised by the religion of Islam, in addition to its historic role as the centre of the Muslim world. It is also differentiated from other nations by its various ethnic groups. Administrative and management decisions and behaviour, as well as management styles are all influenced by Saudi culture (Al-Shehry et al., 2006).

One study by Carter and Weerakkody (2008), conducted in a range of contexts, sought to pinpoint similarities between the cultures inherent in the UK and US. Furthermore, Nurdin et al. (2010) found that culture influences local e-government services, thus reflecting Hofstede's definition of culture as "programming of the mind which distinguishes the members of one human group from another". In the social and organisational context, there are several perspectives of how culture influences e-government and therefore its adoption. However, Lean et al. (2009) considered cultural dimensions, such as the avoidance of uncertainty, as moderating the determinants of diffusion of innovation (DOI), when devising their research model. The discussion and initial level of implementation of Hofstede's cultural aspects justify its relevance, even in research on the adoption of e-government. Hence, it is evident that culture plays a vital role in classifying the social context of an individual's behaviour (Srite and Karahanna, 2006). Therefore, differences in culture can impact on an individual's e-government acceptance and the cultural factor will be tested here to ascertain its impact on the intention to use e-government in Saudi Arabia.

The next section will describe Saudi Vision 2030, planned for the whole country and including the National Transformation Program (NTP) for e-government system development in Saudi Arabia.

2.3 Reasons for Choosing the Kingdom of Saudi Arabia (KSA) as a Subject for Study

To return to earlier statements on the reasons for selecting Saudi Arabia as the focus for this present research, its unique characteristics are examined here, such as its culture, size, and position at the heart of the Muslim world, geographic location and economic features. These are provided as justification for its selection as an appropriate example when proposing a conceptual framework.

Firstly, Saudi Arabia was considered by the author to be a country of exceptional interest in terms of its new Vision 2030. It is also a developing country which does not yet have a cohesive e-government system in place. Secondly, Saudi culture has a vital influence on any development action or process according to Baker, Al-Gahtani and Hubona (2007, p.369) state in their paper, '*The effects of gender and age on new technology implementation in a developing country: Testing the theory of planned behavior (TPB)'*:

> [In] the Saudi culture we argue that individuals are more inclined to show deference to authority and to conform to the expectations of others occupying superior social roles. There are typically more rigid structures of authority between managers and subordinates in Arabic cultures. Saudi Arabia has a culture that values collective achievements and interpersonal relationships. In such a culture, the de-emphasis of individual achievement, and the greater importance attached to collective achievement and group success provides additional rationale to anticipate a strong relationship between subjective norm and behavioural intention

Moreover, Saudi culture is generally regarded as quite unique, according to Baker, Al-Gahtani and Hubona (2007, p.370).

Thirdly, Saudi Arabia has experienced huge population increase over the past 20 years, bringing with it many needs for its government to meet. Therefore, according to Niblock and Malike (2007, p.1) in their book, *The political economy of Saudi Arabia*:

> Saudi Arabia, moreover, has one of the highest rates of population increase in the world, so meeting the needs of the population will become steadily more expensive.

Fourthly, as mentioned earlier, Saudi Arabia is regarded as the head of the Islamic and Arab world, as it hosts the two holiest sites in Islam, namely the Masjids Haram in the holy cities of Makkah and Medina.

Finally and as mentioned earlier, Saudi Arabia is already working on its new Vision, set for implementation in 2030. At present, it is one of the developing countries which have yet to integrate a comprehensive e-government system.

2.4 Information and Communication Technology (ICT) in the Kingdom of Saudi Arabia (KSA)

The Ministry of Communication and Information Technology (MCIT) is held responsible for managing operations and for the administration of Saudi Arabia's National Plan for Information Communications Technology. In synchronisation with the appropriate authorities, this Plan follows up implementation and seeks to accomplish identified goals. It specifies that an annual report, entitled 'Transition to the Information Society', be prepared and submitted. Information on the progress of project planning is to be delivered in this annual report, besides growth indicators for the information society. It is drafted by a team of experts and updated on an annual basis (Business Monitor International, 2015, Q4). Saudi Arabia shares transformation values with several other designated nations, concerning annual MCIT developments. Moreover, where MCIT is concerned, a competitive environment is to be developed and the Ministry concerned anticipates improved services, so that all citizens can benefit (Mcit.gov.sa, 2014).

2.4.1 Statistics for Internet Use in the Kingdom of Saudi Arabia (KSA)

In 1993, it was estimated that the Internet carried only 1% of the information flowing through two-way telecommunications in KSA. By the year 2000, this percentage had increased to 51% and in 2014, a penetration percentage of 63.7% was achieved. A jump from one million to 19.6 million Internet users was thus noted in KSA between the years 2000 and 2014. Given the fact that Saudi Arabia has a closed economy, this has had a huge impact on Internet usage (CITC, 2015). Business Monitor International also reported that the market value of ICT service sales stood at SAR 11.47 billion in 2014, increasing to SAR 12.82 billion in 2015. Many users were exploring the extensive opportunities offered by cloud computing in ICT infrastructure and the services it promised. For example, not only does cloud computing improve productivity, it also enhances efficiency in work processes through faster and more centralised operations. At that time, industry was targeting specific ICT services that were appropriate for its activities, in order to help increase revenue and cut costs. Moreover, one of the many benefits promised by the Internet and computing is cost-effectiveness. This is because

information and databases can be centralised in this way within any industry, leading to enhanced workflow and productivity (Business Monitor International, 2015, Q4).

2.5 The Status of E-Government in Saudi Arabia

As previously discussed, the Saudi Arabian government has made significant efforts to improve e-government. One of the main programmes launched in this regard was the Yesser Program, initiated in 2005. In fact, this programme was developed by the Communications and Information Technology Commission (CITC), the MCIT, and Ministry of Finance, with the help of other government bodies in Saudi Arabia (Yesser, 2006). The main purpose of Yesser is to provide financial support for all government agencies in the adoption and development of e-government systems that provide e-services (Yesser, 2016). A recent United Nations (UN) survey in (2014) indicated that significant developments had been achieved over the previous four years, in terms of the nation's readiness for e-government.

In 2005, KSA was ranked 80th in the world, with regard to e-government implementation (UN, 2005), rising to 41st position in 2012 and 36th position in 2014 (UN, 2014). The Yesser Program has been hugely successful so far, as the population now has access to electronic services for G2G, G2B, G2E, and G2E transactions (Al-Sabti, 2005). Yesser aims to enhance co-operation between local government authorities and to develop inter-Ministry ICT, thus eventually leading to e-services for the public sector (Yesser, 2016). The E-Umrah 'electronic system' facilitates the issuing of visas 24 hours per day, seven days a week. Moreover, it once again highlights co-operation between different government Ministries (Hashim, 2014).

2.5.1 E-government Projects in the Kingdom of Saudi Arabia (KSA) (Yesser)

Transformation towards e-government is relative importance for the Saudi government, due to the many positive aspects of e-government for the national economy. The Ministry of Finance was directed to work on developing an e-government programme in 2005, being assigned the responsibility to plan, develop and manage MCIT. This comprised the launch of e-government and MCIT itself (Yesser.gov.sa, 2015).

MCIT was instructed by Royal Decree in 2003 to formulate a plan for the provision of e-government services and the procurement of essential resources. It consequently formed a partnership with CITC and the Ministry of Finance to develop the Yesser e-government programme in 2005. This was based on the understanding that a positive transformation into an information society and the attainment of specified objectives required the collaboration and co-operation of forces in different areas. As a result, it was planned that a higher supervisory committee would control the programme. This committee included the heads of CITC, MCIT and the Ministry of Finance. A directing committee was then formed from the higher committee. Besides the Program's Director General, this committee was to be comprised of representatives from MCIT, the Ministry of Finance and CITC (CITC, 2015).

In every government organisation, an e-government committee should be directly associated with the organisation's top executives. The supervision of an e-government plan in the corresponding organisation is the main responsibility of these committees. Several business units also assist the Program's Director General. These consist of specialists with the appropriate qualifications to implement functions of the programme (Yesser.gov.sa, 2015).

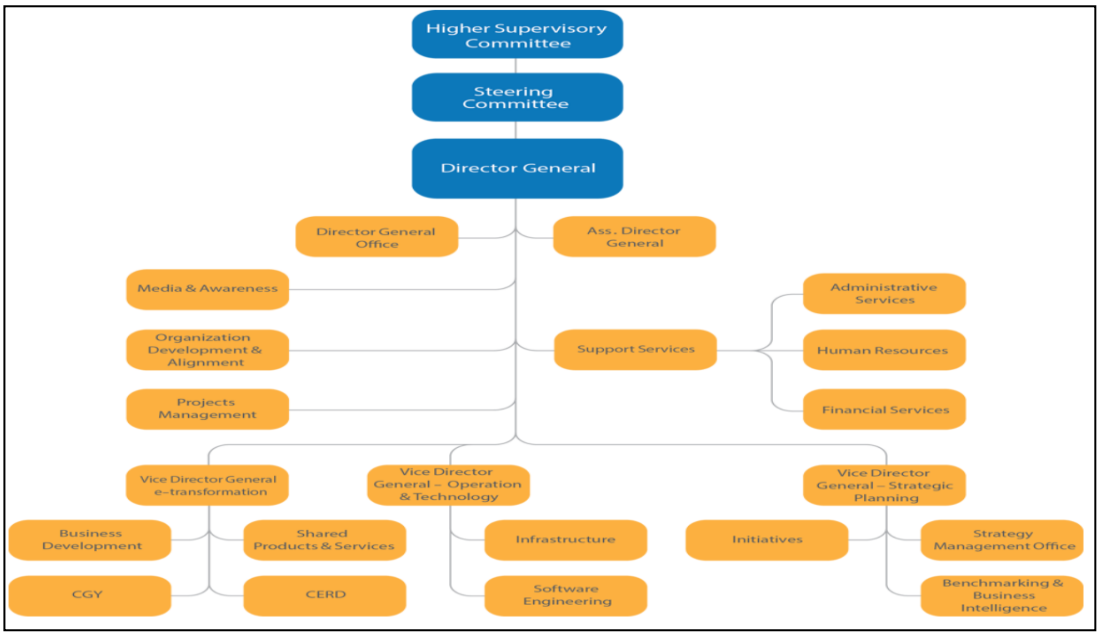

Figure 2.3: The organisational structure of Saudi Arabia's existing e-government programmes *(Source: Yesser.gov.sa, 2015)*

2.5.2 The Availability and Accessibility of E-Government in Saudi Arabia

At this present time, it is relatively difficult to achieve high-performance e-government at low cost. E-government is aimed at changing methods and approaches adopted to carry out work, such as providing more efficient services within a shorter timescale. However, this system of government is still under development in many countries, Saudi Arabia included, which means that although a number of Saudi Ministries and relevant government agencies have provided details on their websites, these sites still only offer limited services and information to the public, thus indicating inefficiency across State departments (Yesser.gov.sa, 2016).

2.6 Saudi Arabia's Vision 2030

> My first objective is for our country to be a pioneering and successful global model of excellence, on all fronts, and I will work with you to achieve that. [King Salman Bin Abdul-Aziz, Custodian of the Two Holy Mosques] (Vision 2030, 2016, p.5)

In the above statement, King Salman Bin Abdul-Aziz initiated Vision 2030 and this was supported by Prince Mohammad Bin Salman Bin Abdul-Aziz Al-Saud, Chairman of the Council of Economic and Development Affairs, who declared:

> It is my pleasure to present Saudi Arabia's Vision for the future. It is an ambitious yet achievable blueprint, which expresses our long-term goals and expectations and reflects our country's strengths and capabilities. (Vision 2030, 2016, p.6)

Figure 2.4: Saudi Vision 2030 Logo
(Source: Saudi Vision 2030, 2016)

Saudi Arabia has therefore drafted a long-term vision, set to end in 2030, as a strategy for development in the country, especially aimed at moving away from its dependence on oil and launching the NTP. This Vision is based on three main pillars. The first of these is that Allah (ﷲ) has blessed Saudi Arabia with the Two Holy Mosques at the heart of the Islamic and Arab worlds and the site of the Ka'aba (Qibla), in which direction more than a billion Muslims across the world turn at prayer. The second pillar of Saudi Vision 2030 is Saudi Arabia's ability to lead global investment capabilities and its goal of enhancing the Saudi economy and diversifying its sources of revenue. The third pillar is the nation's unique strategic location, at the meeting of three continents, namely Asia, Africa and Europe. From this position, it benefits from global waterways; potentially making Saudi Arabia an epicentre of international trade and a gateway to the entire world (see Figure 2.3) (Saudi Vision 2030, 2016).

Vision 2030 has determined the triggers for developing the country socially, economically and nationally. A vibrant society with strong foundations will instil deep roots for its members to lead fulfilling lives. A thriving economy created through long-term investment will in turn open up new business avenues; make the most of existing business opportunities, and take advantage of the country's unique location. An ambitious nation, with effective government and the right resources could identify its development needs - for example, e-government - by embracing the transparency of e-government, and implementing it to the highest degree and with minimum delay in the expansion of e-services (Saudi Vision 2030, 2016). In addition, Saudi vision to improve Saudi Araba's e-development rankings saw the country move from 90th position in the E-Government Development Index (EGDI) in 2004 to 36th position in 2014, (UN E-Government Survey, 2014). Saudi Arabia is now seeking to improve its e-services even further, in order to become one of the world's top 10 countries to effectively implement e-government. Moreover, it intends to expand its current e-services, so that they also include information on healthcare (IHC) and education. There is in fact growing support for the use of e-service applications, such as data-sharing platforms, cloud computing and human resource management. However, the essential steps for improving e-service governance must be taken by the government itself (Saudi Vision 2030, 2016).

2.6.1 Objectives of the National Transformation Program (NTP) 2020

The NTP has promoted actions to achieve its goals based on Saudi Vision 2030, for which there are four main objectives (Saudi Vision 2030, 2016):

- Private sector participation consisting of 40% of its expenditure on public sector initiatives.
- Job creation to provide more than 450,000 jobs in the private sector.
- The maximising of local content, contributing to the localisation of over SAR 270 billion.
- Digital transformation through the creation of five digital platforms in the public sector; the launch of 29 digital initiatives in vital sectors, and the investment of a number of national digital assets.

2.6.2 The Saudi National Portal (SAUDI)

SAUDI, the Saudi National Portal was set up as an integrated portal to help launch a cohesive e-government system in Saudi Arabia. In addition, the SAUDI Portal presents an interface comprising a diverse spectrum of annual reports, as well as providing access to e-services for individuals, the government, businesses and visitors, as part of the single e-government system. The Portal also contains lists of the facility's rules, regulations, plans and initiatives, as well as the various government agencies that may be accessed via the Portal and an e-map of the website (SAUDI, 2015).

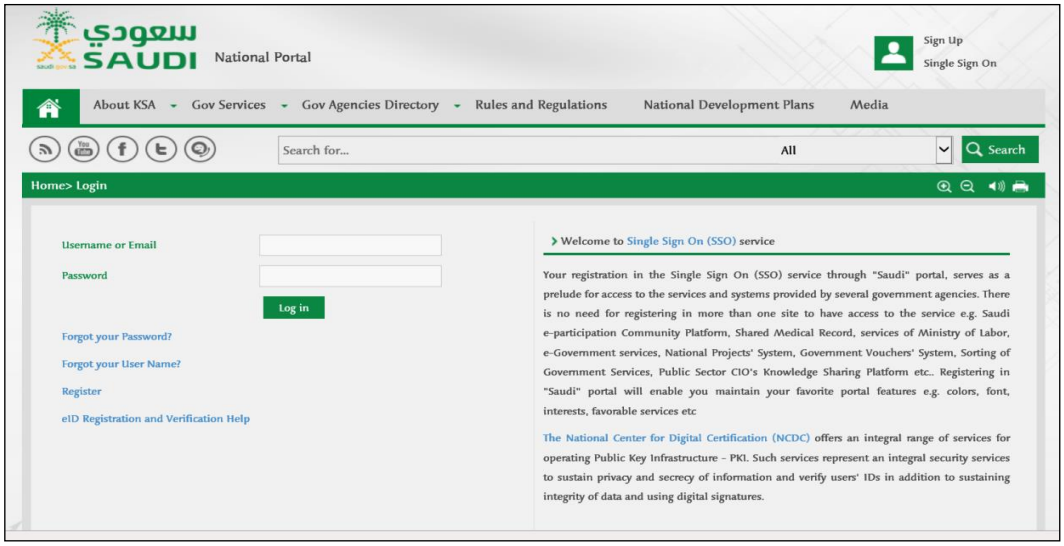

Figure 2.5: SAUDI National Portal homepage

(Source: SAUDI, 2015)

2.7 The Benefits of E-Government Systems

E-government is usually considered as a tool that can help improve transparency and effectiveness. Its applications in public sector areas around the world have been found to facilitate reform. E-government can also help with the collection of additional revenue (Bakry et al., 2016). E-government services are therefore important in that they decrease cost and corruption, while also ensuring convenience through controls. This means that the entire process of service provision can be monitored and managed. These benefits result from the modification of e-government associations with businesses, citizens and other aspects of government. The decision-making powers and flexibility of civil servants are also reduced through e-government, which additionally impacts accountability. Information-sharing is in fact necessitated by e-government, because services are presented online for all to see. E-government therefore provides easy and rapid access to organisational information for all employees, thus levelling out hierarchies (Layne and Lee, 2001; Fang, 2002).

2.8 Barriers and Challenges to E-Government

The various barriers and challenges to undertaking an e-government project can shift rapidly, according to the course of e-government development. The Internet and advances in ICT have had a considerable effect on the world through, for example, e-government systems (Jaeger and Thompson, 2003). With regard to e-government system development in Saudi Arabia, although a great deal of effort has been made and it has been steadily improving over the past 13 years, further development is still required. Today, the world is inextricably interconnected and interdependent and so it is impossible for any nation or organisation to operate in complete isolation. Consequently, many countries are obliged or choose to work together and ICT is inevitably involved in e-government projects. However, the Arab world in general is least prepared for e-government, compared to most of the rest of the world (Al-Shoaibi, 2008). Therefore, the Saudi government has established its Yesser Program to ensure that the vital steps are taken for fulfilling its vision through proper planning and implementation. This will require the establishment of an appropriate infrastructure (Al Ghoson, 2010). Furthermore, the Saudi government needs to enhance e-government

system development in its various bodies, as the vast majority of these remain aloof in this regard. Saudi Arabia's Ministries must therefore turn their attention towards developing e-government and reaping its benefits, so that they will be encouraged to use the various technologies associated with it.

2.9 Summary

This chapter has presented the research background (the Saudi context) and various significant points relating to KSA. It builds up a basic profile of KSA, with information on its location, economy, culture, demography and population. Moreover, the status and use of ICT in the nation was identified, including statistics for Internet use. This clarifies the situation facing e-government systems, with specific reference to Yesser, the current e-government project. It outlines the benefits of such a system, as well as the barriers and challenges to its development in the respective context. The next chapter will review the relevant literature in e-government adoption, implementation, diffusion and development.

Chapter 3: Literature Review II - Electronic Government

3.1 Introduction

The previous chapter investigated the phenomenon of e-government in the Saudi context, presenting a profile of KSA, Saudi's Vision 2030, the ICT situation - including e-government projects - and the importance of the research context as part of the Literature Review, in order to further investigate the issues influencing the development of e-government in Saudi Arabia.

The current and subsequent chapter present the Literature Review in the broader context of e-government in general. Previous researches in this area have largely consisted of surveys and multiple case studies, with some authors mainly exploring the factors that constrain or serve as a barrier to e-government implementation in either developing or developed countries. This literature proves useful here for building an overall body of knowledge for the implementation of e-government, made up of six main sections, each reviewed from a different angle: definitions of e-government; ICT growth; classifications of e-government (G2G, G2C, G2B and G2E, as described earlier), and the implementation of e-government models (Chandler and Emanuel's model, Howard's model, and Layne and Lee's four-stage model). In addition, the following sections evaluate examples of successful e-government systems in the real world. The final section then reviews theories of innovation adoption, specifically with regard to e-government systems.

3.2 ICT Growth

It was in the 1960s that research into the association between the development of telephone density and ICT growth began (Jipp, 1963). Since then, such research has primarily been carried out on telecommunications (Gilling, 1975), even though the outcomes of this research mainly indicate a positive link between the economy and ICT growth (Ishida, 2015). Moreover, these studies are largely based on static information (Hardy, 1980; Saunders, Warford and Wellenius, 1983; Snow, 1988). Consequently, they do not indicate anything concerning the long-term equilibrium between the different variables involved. This means that such research fails to provide adequate

knowledge of what ICT actually adds to economic growth (Pradhan, Arvin and Norman, 2015).

The innovation in ICT has significantly speed up, it was specifically in the late 1990s that truly rapid growth occurred, with ICT becoming a 'new utility' (Friedman, 2003). Good communication is a major business driver and it has become quite common to see the adoption of interrelated technologies in the last decade, since industry and governments have embraced various concepts of networking what were once stand-alone operations in the past (Van Reenen, Bloom and Draca, 2010; Biagi, 2013). This enhanced speed of development has taken place due to innovations like large-scale data networking through satellites and fibre-optic distribution. As a result, since the mid-'90s, the Internet has become one of the main channels of information transfer (Laube and Zammuto, 2003; Friedman, 2003; 2005).

Governments have been increasingly promoting their services through electronic means over the past 20 years, ever since the Internet started to become widely used for both entertainment and business purposes. Basically, as outlined earlier, e-government systems involve the use of technology to manage government matters by providing information and services for businesses, manufacturing firms and citizens alike. They are therefore a virtual means of government that can provide public services to customers. Moreover, they do not involve any intermediary, but can fulfil their role in political activities (Froozande Dehkordi et al., 2011). The development of ICT has in fact meant that governments can implement their e-government systems in such a way, so as to be able to impact all aspects of politics, the economy and society (Sameti et al., 2014). In addition, ICT facilitates and expands e-government functions (Ciborra, 2005; Verdegem and Verleye, 2009).

Maier and Nair-Rechert (2007, p.43) have defined ICT as:

> …any communication device and application, such as computer and network hardware and software, the Internet, telephones, cell phones, radio and television, and additional services they enable…

The Internet and ICT contribute to investment in e-government, particularly in the form of marketing (Lee, Tan and Trimi, 2005; Metaxiotis and Psarras, 2004). Therefore, if e-government is considered as an innovation in itself, then it could be regarded as a

concept of government that utilises the Internet and an associated electronic infrastructure.

Both rapid development and the impact of modern ICT signify that e-government is being accepted by more and more governments around the world. It is through ICT, particularly the Internet, that governments can provide most of their services for a nation's residents at any time. Therefore, widespread use of modern international technologies will certainly have an indirect impact on political, economic and social scope. Moreover, it makes good economic sense to render government more efficient and some policy-makers and researchers feel that through e-government, corruption can also be dramatically addressed, while at the same time reducing the level of authoritative power in certain quarters through legal enforcement and enhanced information transparency. The outcome of this is greater regulation and potentially, reduced corruption.

This present research has explored various effective approaches for reducing corruption, for example, by providing easy access to information, particularly regarding political matters and government performance. With respect to transparency of information, the Internet also plays a significant role, with information being channelled at a much lower cost. Thus, in terms of controlling corruption, the integration of e-government could be an effective approach. However, to reduce corruption, serious and systematic effort is necessary and for this to be effective, the concept of corruption itself needs to be correctly understood, through studies on its origins and causes (Sameti et al., 2014).

For a significant amount of time, government functions, namely services, have been improved through ICT and the rise of e-government is evidence that modern ICT-enabled management and services in public administration, especially those which are Internet- or Intranet-based, have attracted comparatively high levels of public interest and elicited demand (Scholl, 2003).

3.3 Definitions of E-Government

E-government has been highlighted for advancement by different countries, referred to as, for example, the SAUDI National Portal in the context of Saudi Arabia (SAUDI National Portal, 2015). However, there are numerous definitions of the term 'e-

government'. Today, the Internet is a key component of how governments operate (Rahman, 2007). Table 3.1 shows how various researchers define e-government.

Table 3.1: Definitions of e-government

Authors	Definitions
(Srivastava and Teo, 2007)	E-government represents the activities of public sector organisations which can be improved by enhancing the services delivered to the public through the application of ICT and the Internet, especially for the benefit of businesses, employees, citizens and other stakeholders.
(Carter and Belanger, 2004, p. 1)	*"The competence with which government facilities and information are delivered to employees, citizens, and business and government agencies can be facilitated and improved by IT, particularly telecommunications."*
(Heeks, 1999; 2001)	E-government is about increasing productivity and saving money through connections between public sector organisations and their departments. It can also improve connectivity between the above and across government levels. Moreover, it facilitates transactions between government and all other bodies (citizens, businesses and organisations).
(Fang, 2002)	Governments can implement the most pioneering ICT, principally Web-based Internet applications, so that individuals and businesses can have more convenient access to government services. In this way, service quality can be improved and better opportunities can be offered to contribute to democratic processes and their foundation.
(Jones, Irani and Sharif, 2007)	A growing phenomenon can be established by e-government, with massive investment so that senior public-sector institutions can be modernised at all levels. However, e-government can lead to problematic and dramatic changes in an organisation.

Moreover, Colesca (2009) states that e-government represents the activities of public sector organisations, which can be improved by enhancing the services delivered to citizens through the application of ICT and the Internet, especially for the benefit of businesses, employees, citizens and other stakeholders. In addition, Almarabeh and AbuAli (2010, p.30) have identified e-government as "the use of information and communication technology (ICT) – such as Wide Area Networks, the Internet, and mobile computing – by government agencies". Consequently, from the thus definitions the researcher of this thesis defined "e-government" as:

the electronic services or online services delivered by the government via Information and Communication Technology (ICT) to several dimensions, such as the private sector, public sector, other government organisations and to government employees.

3.4 Classifications of E-Government Models

E-government is defined in different ways, similar to e-commerce and State e-business, but it primarily involves digital interaction between the government and citizens. It can also be defined as the provision of government services for citizens through ICT (Srivastava and Teo, 2007; Norris, Fletcher and Holden, 2001). The main benefits associated with e-government are the institution of public e-services, with the objective of enhancing services and thus improving democratic processes and supporting modernisation (Fang, 2002).

There are currently five main types of e-government model and these are each classified into five categories (Carter and Belanger, 2005): 1) G2C, 2) G2B, 3) G2E, and 4) G2G, as introduced earlier and explained in more detail (see Figure 3.1).

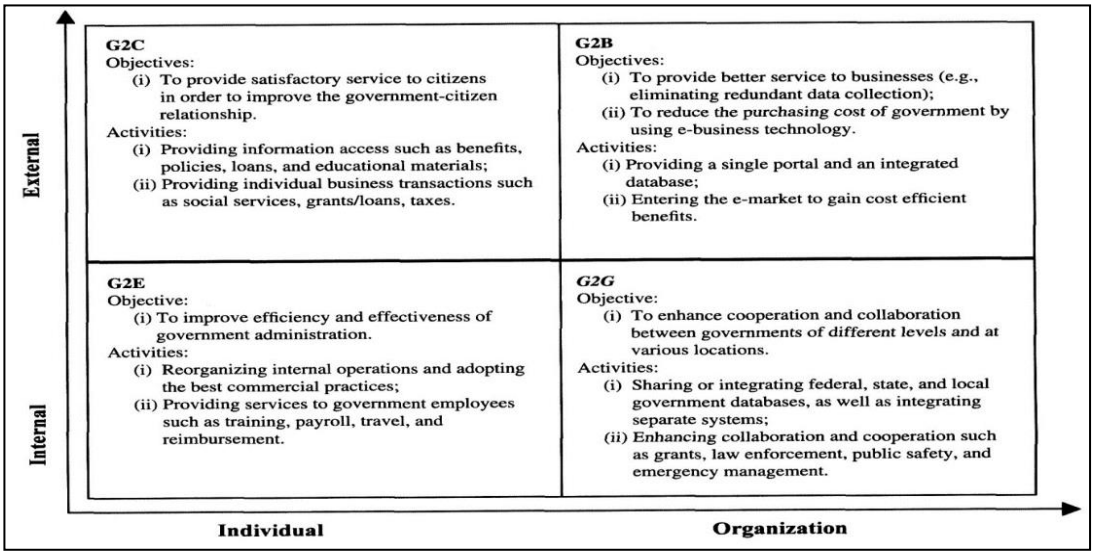

Figure 3.1: Summary of e-government portfolios
(Siau and Long, 2005)

An overall framework for e-government is presented in Figure 3.2, It could be considered as an integrated and sophisticated portal for connecting internal governance and external use and is potentially made possible through the advancement of IT, the Internet and telecommunications in general (ICT) (Siau and Long, 2005).

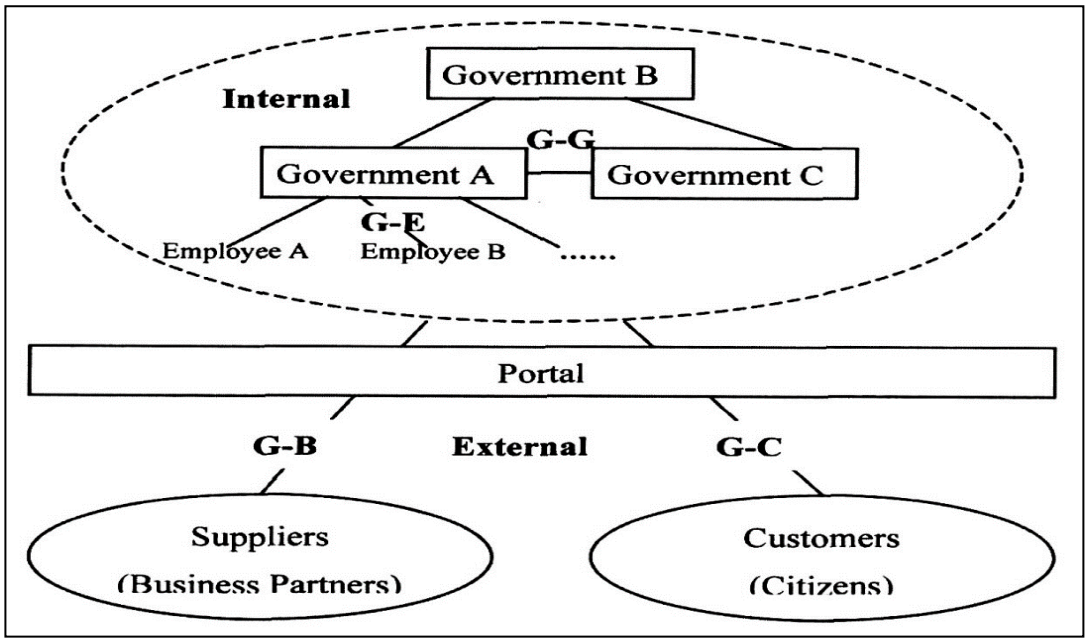

Figure 3.2: Siau and Long's e-government framework
(Siau and Long, 2005)

3.4.1 Government to Government (G2G)

The G2G model is built on relationships between various government bodies. These relationships are linked and connected electronically, as a means of interaction between organs of government and their departments, as well as with other government organisations (Chan and Chung, 2002). The rationale behind this is that governments depend on various levels within their structure to be able to function effectively and deliver services efficiently (Karacapilidis, Loukis and Dimopoulos, 2005). An online communication portal thereby allows government agencies and departments to share databases, resources and skills.

G2G transactions may also be considered in the use of communication, collaboration and standardisation of information and services through electronic means. This would enable electronic administration to empower all government agencies, organisations and departments to create their own data warehouses, thus enabling them to exchange information and services (Yildiz, 2007). G2G is described by Hamza, Sehl and Egide (2001) as an internal relationship of knowledge, information and data amongst government agencies, created with static electronic media. In this way, electronic services can be delivered and constructed for cooperative mechanisms and

collaboration. The G2G concept also includes e-government and collaboration between agencies (Gregory, 2007; Klischewski and Askar, 2010; Hamza et al., 2011).

The relational aspect of this functionality refers to ICT being adopted to ensure the success of e-government implementation in relationships between government organisations and within a G2G structure (Gupta, Dasgupta and Gupra, 2008). It was observed by Haque, Memon and Shaikh (2013) that the development of the G2G sector is not just constrained by integrative and inter-operative aspects, but also by the lack of an adaptive networked technological infrastructure for G2G systems to be able to improve their electronic communications and the interaction between government departments. ICT enhances G2G interaction, which has also been observed to benefit from better electronic communications and collaborative systems. It has been seen that this leads to considerable improvement in politics, public administration and government structure at all levels of government departments (Chang, 2012).

3.4.2 Government to Citizen (G2C)

This type of e-government model (G2C) represents a communication link between government bodies and citizens. Therefore, citizens can be made aware of the e-services provided by the government through ICT and typically use these services with personal identification via secure mechanisms. G2C transactions promise a range of different benefits. The empowerment of public participation through the provision of dissemination tools to facilitate and reinforce participation in community life - for instance, by means of email and online discussion forums - is one of the benefits of G2C (Seifert, 2003, 2008; Ndou, 2004; Alshehri and Drew, 2010). The advantages of such services are apparent when citizens are able to access government services "anytime… anywhere" (Wu, 2011). This viewpoint has been supported in the research, where claims are made that the utilisation of recent technology has added further value to G2C via service delivery (Scholl et al., 2009). G2C has also been seen as improving communication between citizens and the government through greater consistency. Especially highlighted is the fact that the government provides online access to public data via online portals, kiosks and websites, in order to ensure that the benefits of a dissemination approach are reaped (Georgescu, 2008).

However, besides the social and technical challenges, financial and organisational barriers are considered as significant factors impeding the development of e-government systems in the public sector. For instance, organisational challenges consist of support from top management, such as suitable cooperation and collaboration with lower level management, thus enabling the provision of necessary resources, training and solutions for stakeholders. Moreover, there may be opposition to transferring over to electronic means (for instance, changing practice from manual to electronic methods in each government division and sub-division), or a dearth of ICT training provided for employees (such as enhanced training and new skills acquisition processes for government employees, in order to ensure the provision of efficient services for citizens), or a lack of collaboration (for example, the creation of a cooperative electronic society that is linked and accessible). These factors have all been observed to hinder governments from providing efficient services for citizens and residents. A further challenge is presented by financial constraints, such as a lack of appropriate planning and budgets to fund e-government programmes providing and maintaining system software and hardware, as well as the provision of training to develop and enhance e-government implementation (Alshehri and Drew, 2010).

3.4.3 Government to Business (G2B)

The emphasis of the G2B structure is on relationships between government bodies and businesses. These relationships involve interaction between local government authorities and businesses (Carter and Belanger, 2004). Two kinds of interaction exist between governments and businesses, namely G2B and B2G. G2B involves business dealings where the government informs businesses of rules, regulations and e-government services, whereas B2G interaction only takes place when businesses provide goods and e-services for the government (Huang and Bwoma, 2003). G2B is observed as one of the main targets of e-government projects, because businesses are considered as impacting the efficiency of the public service sector (Heeks, 2006).

3.4.4 Government to Employee (G2E)

The G2E model emphasises the relationships formed between the government and its employees. It can prove to be an effective way of offering e-services, such as by issuing

notifications and requests for annual leave and salary records, as well as carrying out leave balance checks. It can also serve to bring employees together, so that they can share knowledge, thus increasing efficiency. In so doing, employees' needs may be analysed more effectively (Seifert, 2003; Alshehri and Drew, 2010.

G2E services include G2C services and some specialised services that are exclusively intended for government employees. These services include the provision of human resource training and development, which can help enhance daily operations and transactions with citizens (Chavan and Rathod, 2009). With respect to a vision for e-government, the G2E solution concerns the empowerment of employees, which will in turn promote the delivery of assistance to citizens in the most timely and suitable manner, thus optimising government solutions and accelerating administrative processes. Through this, civil servants will have an easier and more efficient connection with other divisions; drawing upon the latest news, optimally using the available resources, and making the most of suitable support. In this kind of interaction, the benefits for the government include streamlined and efficient communication and workforce retention, with empowered and pro-active personnel. Since the advantages for employees include increased responsibility, this leads to common ground for meeting ICT needs and the promotion of a more efficient, cross-departmental understanding of all services.

The welfare system in the UK (Gov.uk, 2014) is an example of a G2E e-government relationship. This is an e-government system to convey help and assistance to employees on low incomes, pensioners, disabled persons, parents and caregivers. The management of such benefits for those on a low income and provision of assistance for any disease or work-related accident is the key objective of this e-service.

3.5 Perspectives Found in E-Government Literature

The last 20 years have seen the publication and exploration of numerous e-government frameworks and several studies have been conducted to model such frameworks for the adoption of ICT. Many case studies have also been conducted on the topic of e-government worldwide. This section will therefore present a brief review of e-government literature. Overall, the present thesis examines the adoption, development

and implementation of e-government on a global level, with particular attention to the Saudi context. This section is therefore mainly concerned with the adoption, diffusion, implementation and development of e-government.

E-government development is considered as an issue of high importance in Arab countries and previous studies have presented evidence of the numerous potential benefits of e-government for these countries. Alhujran, (2009) has already been observed the performances of several Arab countries stated that Bahrain, UAE and Qatar; these being host to the most evolved e-government systems in the Arab world. Meanwhile, other Arab countries have a lower level of e-government service implementation; for example, the Sudan, Iraq and the Yemen. Conversely, other Arab countries, such as Saudi Arabia, have presented their e-government systems as a medium of e-government performance. Al-Shehry (2008) identifies the majority of developing countries as needing to improve their networks in terms of ICT infrastructure and this includes Saudi Arabia. This fact has been recognised and acknowledged at national and international levels and in the long term, it is a major determinant of the successful development of any e-government system This chapter and the chapter followed therefore present the challenges, obstacles impacting and factors influence on the e-government adoption and development, with a view to ascertaining how its e-government performance, success and service provision could be enhanced.

E-government systems occupy an advanced domain in any country, thus indicating the importance of this area for researchers, especially in terms of reviewing the e-services offered and the performance of such systems. Most previous studies have examined the e-services currently being offered worldwide and the existing models of e-government relating to the public and private sectors (Shareef, Archer and Dwivedi, 2015). Basamh, Qudaih and Suhaimi, (2014) have examined the technology concerned and ICT utilities in relation to e-service performance; investigating availably, usability, accessibility and reliability for the citizen and how influence on the e-government adoption and e-services in the public sector needs. Meijer (2015. p.200) states, "…citizens need to be convinced of the need to change their belief and value systems and to adopt new routines in the use of new technologies".

Other issues examined in the existing literature include organisational context, which are strategy, top management, change management and organisational culture that hindering the adoption of e-government, which identified as most prominent at organisational level and many authors have consequently explored them (Meijer, 2015; Alshehri and Drew, 2010; Irani et al., 2008; Al-Shafi and Weerakkody, 2008; Al-Gahtani et al., 2007; Al-Shehry et al., 2006). Therefore, this thesis similarly reviewed deeply a wide review of the literature on critical factors within the organisational context (see respectively Chapter Four sections 4.5 – 4.5.4).

The environmental context was subsequently identified from the Literature Review. Ahn (2010), Bolgherini (2007) and Bakry (2004) determined the factors of the environmental context as economic, cultural, regulatory and political that infulance on the e-government adoption. Moreover, in Saudi context Altameem et al., (2006) stated the there is no a clear policy for such ICT system adoption. Bekkers and Homburg (2005) also highlight critical environmental factors as contextual, with the desire for new technological sophistication, such as e-government system development. Alshehri and Drew (2010) and Al-Ghaith et al. (2010), for example, observed that Saudi Arabia's government and economy are centred upon oil production and the revenue from this is invested across the entire Saudi economy and identified as success factor for e-government (Al-Solbi and Al-Harthi, 2008). Moreover, this thesis pays particular attention to environmental factors in Chapter Four (section 4.6).

The fourth issue of high importance social factors, Thompson et al., (1991; p. 126) have described Social factors as *"the individual's internalisation of the reference group's subjective culture, and specific interpersonal agreements that the individual has made with others, in specific social situations"*. Number of researchers identified the social factors from in literature is such as Dawes (2008); Dunleavy, Margetts, Bastow and Tinkler (2006); Milakovich (2012); Rana et al. (2015a); Alshehri and Drew (2010); Irani et al. (2008); Al-Fakhri et al. (2008); AlSobhi et al. (2009); Alshehri et al. (2012); Alateyah et al. (2013); Alsaif (2013), and Albesher (2016). For example. Alshehri et al. (2012 have identified a various social factors for example, awareness, trust, privacy, performance and security. Moreover, Alateyah et al. (2013) have identified number of factors namely Technological infrastructure, lack of awareness, privacy issues, quality

of services, culture and website design thus factors are influence on the citizen's adoption of e-government system. This thesis consequently reviews relevant critical factors from the social perspective and analyses the relationship between the above factors and e-government adoption (see respectively Chapter Four, section 4.7 and sub-sections 4.7.1-4.7.2).

Savoldelli, Codagnone and Misuraca, (2014) have presented four steps in the process designed to enhance the adoption of e-government services, namely better policy planning - leading to improved performance in the delivery of services outlined in policy - better outcomes in terms of user satisfaction and greater trust in the government on the part of the citizen. Moreover, this process is cyclic and feeds back into the performance of decision-makers and policy-planning, resulting in wider development and adoption of e-government services (see Figure 3.3)

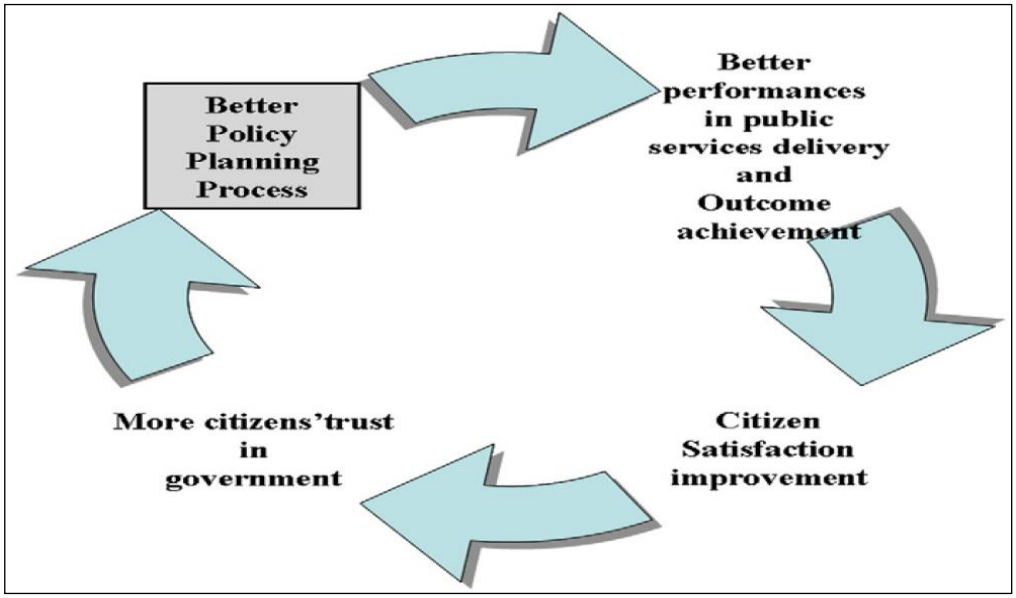

Figure 3.3: Virtuous cycle of e-government service adoption
(Source: Savoldelli, Codagnone, and Misuraca, 2014)

3.5.1 E-Government: Its History and Underlying Concept

In the mid-1990s, e-government systems first started to appear in member countries of the UN, such as the UK. 'E-government' was the term applied to the e-services provided by governments and by 2012, many other countries had already begun to introduce it. Previous studies by Heeks (2006), Gouscos et al. (2007), Shareef, Archer and Dwivedi (2015), and Rana et al. (2015b) indicate the importance of e-government

systems for the citizen; especially highlighting the superior ease of access and high quality of such services, together with the savings made in terms of time and financial cost. Hence, e-government has continued to advance to higher and higher levels of efficiency and sophistication (Zhao, Collier and Deng, 2014).

The concept of e-government has been extensively analysed in the literature, giving rise to various presumptions and definitions amongst scholars. Zhao, Collier and Deng, (2014) have divided on two domains of e-government subsequently emerge: technical and commercial, in term of providing electronic transactions. Another concept of e-government put forward by Luna-Reyes et al. (2012) indicates four contexts of e-government: e-services provided for the public sector; electronic policies developed for the public sector; electronic management to enhance managerial effectiveness, and electronic democracy, which promotes the use of technology in government elections, or as a mouthpiece for the citizen in government. Therefore, this thesis seeks to identify a number of the factors that might help the decision makers in Saudi Arabia for e-government system development and to determine four of its main contexts, namely technological, organisational, environmental and social. Hence, this thesis highlights the emerging requirements of e-government development and analyses several perspectives, which is the reason for specifying four critical contexts of e-government development in Saudi Arabia.

3.5.2 E-Government Development

The terminology associated with e-government tends to be rather broad and is applied to its development (respectively see Chapter one section 1.3). These processes measure e-government performance and relate to the research question in this thesis ***"What are the most important factors that impact on the development of an e-government system in Saudi Arabia context?*** As mentioned earlier, the need for e-government systems has been growing in urgency worldwide, but especially in developing countries (Gregor et al., 2014). It is in fact an appealing prospect, thus motivating investment from many governments. These authorities then issue policies for the implementation of e-government, resulting in high quality services for users. Therefore, previous studies have conducted reviews of existing research, in order to help improve e-government in terms of its development.

Dwivedi, Weerakkody and Janssen (2012) identify significant motivational forces, divided into five main drivers: political, economic, social, technological and managerial. This is further supported in the existing literature, such as Jaeger and Thompson (2003); Kawalek and Wastall (2005); Ebrahim and Irani (2005); Gupta and Jana (2003); Moon (2002); Layne and Lee (2001), and Al-Shehry et al. (2006). Therefore, Dwivedi, Weerakkody and Janssen (2012) have derived five main groups as follow:

1- Political forces: These are considered as elements of motivation that increase users' electronic participation and trust. Several previous studies have studied electronic participation and looked at ways of encouraging it, especially with reference to electronic voting and other aspects of political activity. It represents a huge step forward in the use of new technologies and ICT, clearly demonstrating the capability of transforming citizens' involvement in political processes.

2- Economic forces: These are considered as drivers of e-government implementation in terms of cost-effectiveness. Generally speaking, the implementation of e-government has directly resulted in reduced costs, time-saving and coordination between government departments and agencies. This has in turn encouraged citizens to participate and increased the effectiveness of government provision, consistently leading to economic improvement.

3- Social forces: These are considered as motivational elements for citizens, with clear and direct benefits for e-government implementation and adoption based on enhanced awareness. It arises from users understanding how to access and use electronic systems. In addition, the availability of e-services in itself serves to encourage participation via a government portal. Moreover, many previous studies have reviewed the concepts and methods associated with ensuring the accessibility of ICT and the Internet for the benefit of citizens, businesses and governments, as they seek to develop. This is equally true of e-government and other public sector e-services.

4- Technological forces: These are considered as the factors motivating participation amongst citizens. They therefore foster e-government implementation, since they determine the speed of service provision, given that physical communication with

local authorities is reduced. Moreover, technology can promote data security, confidentiality and accessibility.

5- Managerial forces: These are factors motivating e-participation, with a clear influence on e-government adoption and implementation. They play a vital role in e-government implementation and this is confirmed in previous literature on re-engineering strategies, business process re-engineering (BPR) and management support.

In fact, e-government adoption, and development have accelerated over the last 15 years, especially in developing countries (Akhtar Shareef et al., 2014). Gottschalk (2009) has reviewed variations between the steps and characteristics of e-government implementation, such as matters of technology, functionality, facilities, privacy and security amongst both users and developers. Alanezi, Mahmood and Basri (2012) have also reviewed a sample of government websites and investigated the quality of the services offered, especially system availability; security; privacy; credibility; transparency; interactivity; personalisation, and time processes, all of which are regarded as important elements of ICT adoption in the public sector. Moreover, research conducted in the US by Thomas and Streib (2003) has compared e-government and Internet adoption in general, thus determining whether Internet use is essentially influenced by factors such as education and ethnicity, which were found to be very important predictors of e-government usage. It was deduced that there is a gap between government website usage and Internet access. Other studies have presented additional differences between the factors influencing e-government uptake, e-government effectiveness, and e-government adoption and implementation (Zhao, Collier and Deng, 2014). Dwivedi, Weerakkody and Janssen (2012) present numerous concepts and factors influencing e-government implementation and diffusion. They identified several elements bearing upon these and e-government adoption, frequently characterised as economic development; a focus on the citizen; accessibility and availability; accountability and transparency; efficiency, and cost reduction.

The existing literature identifies several critical factors, which go beyond the main technological, organisational, environmental and social context. For example, Akhtar Shareef et al. (2014) have defined a model to enhance citizens' adoption of e-

government services and this is considered from various perspectives, such as cultural, behavioural, organisational, economic, technological, and social. The social context has been especially examined by Thomas and Streib (2003); Heeks and Bailur (2006); Gouscos et al. (2007); Belanger and Carter (2009); Al-Shafi and Weerakkody (2010); Ansell and Torfing (2014); Sørensen and Torfing (2011), and Szkuta, Pizzicannella and Osimo (2014). The above authors have all proposed models to help adopt and implement e-government systems in various contexts. In Saudi Arabia, the current section presents the adoption, implementation, development and diffusion of e-government, as mentioned above and incorporates the key elements, concepts, contexts and benefits observed in international contexts.

Several research studies have in fact been conducted by authors such as Al-Fakhri et al. (2008); Alfarraj et al. (2012); Alshehri et al. (2012); Alateyah et al. (2013); Alghamdi and Beloff (2016); Alateyah et al. (2014), and Alghamdi et al. (2014). Moreover, Al-Ghaith et al. (2010) identified many of the key elements influencing e-government adoption and implementation, diffusion and development, especially the social context, which directly leads to user performance. This will be examined here in terms of Saudi Arabia, thus investigating the purpose of enhancing e-government development, and adoption in Saudi context. Hence, in Chapter Four, this thesis reviews the technological, organisational, environmental and social contexts of e-government adoption and implementation, as well as the critical factors influencing these (respectively see sections 4.4-4.7).

3.5.3 E-Government Innovation

Innovation has been extensively defined in the literature, such as Bessant et al. (2005, p.1366) defined as *"Innovation represents the core renewal process in any organization. Unless it changes what it offers the world and the way in which it creates and delivers those offerings it risks its survival and growth prospects"*. E-government is considered as an innovation in the ICT context and so it is generally preceded by new strategies for attaining short- and long-term objectives linked with e-government adoption. Meijer (2015) identified various phases of innovation for e-government implementation and these include additional strategies to meet the facilitating conditions for such implementation, so that appropriate means of applying innovation

can be designed and prepared. Moreover, e-government innovation itself requires a framework, especially during its later phases of implementation.

The process of innovation identified in previous studies has been classified into various phases and interventions. Sometimes, barriers are identified and there may be variations between initiatives to introduce innovation in different governmental structures (Meijer, 2015). In terms of e-government innovation, Schwester (2009) states that the key underlying component of all barriers to innovation is an unwillingness or failure to enhance and support the innovation process. Therefore, the key elements or actors involved in this aspect must be effectively managed. Schwester (2009) also highlights the need for adequate investment in e-government innovation. In addition, Eynon and Margetts (2007) present the innovation process as one of top priority for building a strong network of e-government services, which will in turn enhance the innovation process. On the other hand, seeking to implement high quality strategies will also support and enhance e-government services.

Other barriers observed in e-government innovation relate to culture (Meijer, 2015). Margetts and Dunleavy (2002) describe how cultural barriers can directly influence changes in organisational values. There are various ways in which e-government innovation can lead to a reworking of systems and the integration of new technologies, such as developing ways of ensuring accessibility for the user, both on the side of the citizen and the government. Capacity must also be factored in. The importance of innovation and how it is managed has in fact been extensively explored in previous literature (Hartley, Sørensen and Torfing, 2013).

Finally, multiple studies have been dedicated to examining e-government as an innovation, thereby presenting ways in which innovation processes may be structured to build a strong body of literature on public innovation. Since the 1990s, this has been an especially vibrant and rich area of study (Ansell and Torfing, 2014; Osborne and Brown, 2005; Sørensen and Torfing, 2011; Szkuta, Pizzicannella and Osimo, 2014; Meijer, 2015). Therefore, this kind of innovation is subsequently reviewed in various e-government contexts, in order to ascertain what is required to develop the characteristics most likely to promote it.

3.5.4 E-Government Needs

It is frequently discussed worldwide how quality of life can be improved for citizens. One of the main topics considered is the need for e-government services and this has increasingly come to the fore over the past 20 years. As mentioned earlier, e-government involves the transmission and receipt by electronic means of government information and actions in both the business and public sectors. As such, various characteristics bear upon these electronic processes, such as political, business and governmental features.

Abdulkareem, (2015) has in fact identified the needs for e-government and endeavoured to quantify them that users, citizens need to know how to use e-government. Therefore, an initial step towards implementation is inevitably education, with governments investing in and promoting ICT in early school and adult education. Moreover, citizens need to be able to participate in political processes and have their voices heard, especially with the speed of advancement in digital technology. Chun et al., (2010) new technologies support and facilitate the user's needs. Consequently, Angelopoulos et al., (2010) identified that a further requirement of e-government is to ensure that it can enhance, support and motivate democratisation and decentralisation by instituting policies that will ensure its future adoption and implementation of e-government system.

3.5.5 E-Government Challenges and Obstacles

The challenges and obstacles identified in the literature may be observed as financial support; infrastructural requirements (technical and software); national culture; critical factors, and management techniques. Therefore, the current study particularly scrutinises these obstacles. For instance, perhaps the most important matter to address involves technical and software infrastructure, as these represent a key factor of e-government adoption and development (Al-Busaidy, Weerakkody and Dwivedi, 2009). Here, the example of South Africa should be noted, whereby the government has tended to work towards enhanced dissemination of information, with comprehensive e-government adoption (Naidoo, 2013).

Following the various obstacles and challenges identified in previous studies, Al-Busaidy, Weerakkody and Dwivedi (2009) have determined key factors, which potentially hinder or reduce the process of e-government diffusion and adoption. First, the challenges facing e-government development indicate that the management and policy-makers can be at odds with e-government adoption, or may fail to implement it appropriately (Heeks, 2003; Sarantis et al., 2009; Kaisara and Pather, 2009; Savoldelli, Codagnone and Misuraca, 2014; Sarantis, Charalabidis and Askounis, 2011). Moreover, the user's culture may have a negative influence on e-government adoption and development and could equally be seen as a challenge or obstacle. Therefore, a number of authors, such as Ndou (2004); Lam, (2005); Albusaidy and Weerakkody (2008), and Al-Busaidy, Weerakkody and Dwivedi (2009) have highlighted national culture as an obstacle to e-government adoption, whereby trust and acceptance are less likely to exist if there is resistance to change. It is quite consistent in the literature that trust, risk and usability represent challenges and obstacles to e-government implementation (Carter and Belanger, 2005; Phippen, 2007; Al-Busaidy, Weerakkody and Dwivedi, 2009).

In Saudi Arabia context Al-Fakhri et al. (2008) have identified a potential challenges and obstacles to e-government adoption and implementation in can be summarised as a lack of feasibility regarding private sector e-service transactions, or else their unreliability in practice. Moreover, Basamh, Qudaih and Suhaimi (2014) found specific challenges and obstacles to e-government adoption and implementation in Saudi Arabia, such as high costs and other critical factors identified in the literature, namely availability; authentication; usability; privacy; accessibility; security, and computer literacy (Alshehri et al., 2012). Moreover, Al-Sobhi and Weerakkody (2010) present a model for Internet use and accessibility in relation to e-services and highlight the problem of the new digital divide, which has appeared in the Saudi public sector. This is also considered as an obstacle to the use of e-services in Madinah which is one of vital cities in Saudi Arabia.

3.5.6 The Benefits and Advantages of E-Government

Aside from the challenges, the benefits and advantages of e-government adoption have been explored in a number of countries. For example, e-government has been found to deliver satisfactory e-services in several sectors, such as healthcare. It has consequently

been observed to save costs and reduce the risk of key negative influences on e-government adoption (Ndou, 2004; Akessom and Edvardsson, 2008). According to Carter and Belanger (2005), the main purpose of e-government implementation and adoption is to enable the public and private sectors, as well as government bodies and their agencies, to ensure their accessibility, while at the same time creating integrated electronic systems between sectors and entities. Likewise, e-government systems have demonstrated a positive effect on other sectors, leading to high productivity and reduced poverty (Walsham and Sahay, 2006). In addition, e-government services have been found to yield benefits through the reduced need for physical contact between users and local authorities. Besides, they can be utilised to monitor activities within government agencies themselves (Schuppan, 2008). What is more, e-government services have been known to deliver numerous benefits in social and economic terms within national development processes (Basu, 2004).

Finally, the benefits of e-government implementation have been accumulative in meeting the need for improved services in public, private and government sectors; facilitating more reliable procedures, reducing costs and successfully meeting citizens' demands. This thesis sets out to help develop and improve Saudi e-government, so that high quality e-services can be provided, thus reducing the need for physical contact between citizens and government authorities.

3.5.7 E-Government Success

Alryalat et al. (2013) has attempted to establish an empirical understanding of the impact of an IS/IT model for users in Jordan, with a view to enhancing e-government adoption. This is based on three elements: perceived usefulness, perceived ease of use, and social influence, which are identified as key elements of a research model developed to increase e-government adoption. Moreover, Rana et al. (2015b) proposes a research model for increasing e-government uptake in several Indian cities, whereby the critical factors such as perceived trust, subjective norm, perceived usefulness, attitude, perceived behavioural, self-efficacy, and facilitating conditions were found directly or indirectly to the citizens' intention to use e-government services.

Developing countries are in fact investing more than ever in e-government systems, especially in the Middle East. Therefore, the adoption of technology is a vital component of this development process (Gregor et al., 2014). According to Qasem and Zolait (2016), Bahrain is rated as an e-government leader in the Arab world. Moreover, Meftah, Gharleghi and Samadi (2015) examined the relationship between awareness, culture and trust in the dynamics of e-government adoption in Bahrain. The results of the above research support the influence of these elements, together with culture, on the adoption of e-government. However, Qasem, and Zolait (2016) propose a framework based on two functions, which are then further divided into independent variables. For instance, the function of attitude is broken down into relative advantage, the social influence of media, and ease of use, while the function of satisfaction has four independent variables: citizen support, reliability, trust and efficiency.

The success of Saudi e-government has been examined and evaluated by several Saudi authors, who propose a number of models and theatrical frameworks constructed for various contexts. These studies have also addressed the public and private sectors, as well as government bodies. Weerakkody et al. (2013), for example, point to the need for a better understanding of the factors influencing citizens' intermediary trust in e-government. These are identified as performance expectancy (PE), effort expectancy (EE), trust of the internet (TOI), and facilitating conditions (FC), which play a significant role in the adoption of e-government. Meanwhile, Alghamdi et al. (2016) explored a number of critical factors applicable to service-orientated (SOA) governance, using a cyber-security framework amongst government agencies in Saudi Arabia. Conversely, other research by Alghamdi and Beloff (2016) has explored e-government adoption in the Saudi business sector, using an e-government adoption and utilisation model (EGAM), where the critical factors relating to e-government adoption are presented. These consist of the influence of perceived benefits (PB); functional quality of services (FQS); previous experience (PE); perceived simplicity (PS); accessibility (ACC), and regulations and policies (RP), in order to identify the critical factors, which persist in relation to the usage and adoption of e-government in Saudi Arabia's business sector.

3.6 Real-world Examples of Successful E-Government Systems

Many new avenues have opened up, due to the presence of the Internet in people's daily lives. This has been welcomed by the general public and there is evidence that the public now favour opportunities to carry out government-related tasks online (United Nations, 2014). The Internet has thus evolved as a new channel for gathering, disseminating and circulating information and personal details. Government services that are made available online offer hope of improved efficiency in processes. Such opportunities also help citizens who are less interactive to come forth with their own opinions and ideas and promote democratic processes within the country (Layne and Lee, 2001).

From across the world, 25 nations have tended to score highly on the e-Government Development Index (EGDI). The Republic of Korea is ranked highest, with a rating of 0.9462, representing near-perfect implementation and integration. Australia is in second position, with a rating of 0.9103. Singapore then ranks third, with a rating of 0.9076, as shown in Table (3.2). The parts of the world represented by these countries also reflect what the survey aims to convey. For example, most of the countries, amounting to 64% (16 countries) are on the continent of Europe; 20% are in Asia and the 8% (two countries) are in the Americas, with a further two countries in Oceania. Moreover, the countries placed amongst the top 25 nations implementing e-government are classed as high-income countries by the World Bank (United Nations, 2014).

Table 3.2: Top 20 Countries in Asia

Country	Level of Income	EGDI	2014 Rank	2012 Rank	Change in Rank
Very High EGDI					
Republic of Korea	High	0.9462	1	1	-
Singapore	High	0.9076	3	10	↑ 7
Japan	High	0.8874	6	18	↑ 12
Israel	High	0.8162	17	16	↓ 1
Bahrain	High	0.8089	18	36	↑ 18
High EGDI					
Kazakhstan	Upper Middle	0.7283	28	38	↑ 10
United Arab Emirates	High	0.7136	32	28	↓ 4
Saudi Arabia	High	0.6900	36	41	↑ 5
Qatar	High	0.6362	44	48	↑ 4
Oman	High	0.6273	48	64	↑ 16
Kuwait	High	0.6268	49	63	↑ 14
Malaysia	Upper Middle	0.6115	52	40	↓ 12
Georgia	Lower Middle	0.6047	56	72	↑ 16
Cyprus	High	0.5958	58	45	↓ 13
Armenia	Lower Middle	0.5897	61	94	↑ 33
Mongolia	Lower Middle	0.5581	65	76	↑ 11
Azerbaijan	Upper Middle	0.5472	68	96	↑ 28
China	Upper Middle	0.5450	70	78	↑ 8
Turkey	Upper Middle	0.5443	71	80	↑ 9
Sri Lanka	Lower Middle	0.5418	74	115	↑ 41
Regional Average		**0.4951**			
World Average		**0.4712**			

(United Nations (UN), 2014)

3.6.1 The Republic of Korea

In Korea, efforts to introduce and establish an e-government system have been in progress for many years. These efforts began in the 1970s, with the process of establishing e-government through the Five National Computer Networks. The Republic of Korea has an online procedure called OPEN and this enables citizens to monitor their applications at any time (Kim et al., 2009). The plan is known as the Comprehensive Plan for Korea Information and Communication Technology Infrastructure Establishment Project. The system was developed with the capacity to

store all records pertaining to Korean citizens. These records relate to real estate, vehicle registration and personal information (Jonathan et al., 2014; Suk, 2014).

However, there are pros and cons associated with any system and so it should be able to accommodate issues potentially arising during its development and operation. E-government is clearly no exception to this. In the case of Korea, the law provides for data protection, ensuring that there is no risk of misuse by those who are given access to data. Nevertheless, the establishment of Korea's system has not been a one-time process and neither is this even possible; there is continuous work being done to improve the system and the services provided for citizens. The main focus in establishing a legal framework is to ensure privacy for users and issues being conveyed to the government in the best possible way (United Nations e-Government Survey, 2014; Jonathan et al., 2014).

The reason for Korea's top EGDI ranking in 2014 was due to its adaptability to innovation in government services. The nation has welcomed innovation. Development in this area has been documented for many other countries in Asia, but during the years rated between 2008 and 2014, the highest level of acceptance of new technologies was seen in the Republic of Korea (United Nations e-Government Surveys 2008, 2010, 2012, 2014; Jonathan et al., 2014).

3.6.2 Bahrain

In the Middle East, Bahrain is one country that has computerised all government information facilities provided for residents and citizens. Such services are now delivered in the form of e-services to the relevant stakeholders. This has been for the benefit of all those living in the country and Bahrain's inhabitants are very satisfied with the interaction that has now been made possible with the government. The diffusion and computerisation of services has helped increase customer satisfaction and led to greater awareness of service improvement (Ega.gov.bh, 2014).

In fact, the Bahraini government website presents a very advanced system of service provision for the nation's inhabitants. These services relate to e-payment, interaction between different service users and the provision of information. The main aim of the government in Bahrain is to help establish a system that is mobile, fast and efficient, but

also free from any kind of loophole. Moreover, the system is constantly being enhanced by innovation, so that connections and information-sharing all take place between different participants in a more mobile fashion. This participation comprises G2C, G2B and G2E (Ega.gov.bh, 2014).

3.7 Summary

This chapter has presented a review and discussion of relevant literature, divided into five main sections. First, ICT growth was also reviewed in terms of ICT development as a whole in the research field. Additionally, e-government models were classified as G2C, G2B, G2E and G2G. In a further section, various models of e-government, such as Howard's Model, Chandler and Emanuel's Model, Layne and Lee's four-stage model, and the stages of e-government system development and implementation were explained.

The literature reviewed in this thesis also presents examples of e-government research, which reveal the history and concepts embedded within it. As a result, the adoption; implementation; diffusion; development; innovation; requirements; challenges and obstacles; benefits, and advantages of e-government are explored, as well as it success or possible failure. In sum, this chapter has investigated the global context of e-government in appropriate depth, in order to determine the main critical factors influencing the adoption of such systems in the real world. Consequently, in order to address the research question: *What are the most important technological, organisational, environmental and social contexts impacting on the development of an e-government system in Saudi Arabia's Ministries?* The next chapter will review these factors in greater depth, according to the ways in which they bear upon e-government systems, whether nationally or internationally.

Chapter 4: Literature Review III - Critical Factors Influencing E-Government Built on the TOE Framework

4.1 Introduction

As part of the Literature Review, the previous chapter presented various topics emerging from the literature, such as the definition of e-government; ICT growth, e-government models and their classification, and the most successful examples of e-government systems in the real world. This chapter relates to the above, in that it examines e-government system development based on TOE framework, with a focus on four key contexts: the technological, organisational, environmental and social contexts. These primary factors are presented as the main contexts, from which sub-factors are drawn; sub-factors that are believed to impact the development of e-government systems. E-government in general is a topic that has been studied in-depth by a significant number of researchers (for example, Alshehri, Drew and Alfarraj, 2012; Alateyah, Crowder and Wills 2014; Alghamdi and Beloff, 2016). New technology has brought with it various terminology, which is common in the literature and is sometimes applied interchangeably in the present thesis, such as IS, IT and ICT, wherever these terms refer to the same types of innovation.

4.2 The Technology Organisation Environment (TOE) Framework

TOE Framework presented by Tornatzky and Fleischer (1990) which potentially affected by the introduction of new technology are included (Tornatzky and Fleischer, 1990). In the first of these contexts, the types of technology available in industry are described, as well as the differences between current and newly introduced technologies. This can help an organisation analyse what is required for a planned innovation. The second context of the Framework is organisational and here, organisational structure is considered, as well as the type and scale of an organisation's management. The third context covered by the TOE Framework is environmental, whereby industry competitors are also considered (Tornatzky and Fleischer, 1990).

The TOE Framework provides sufficient detail and information to permit adaptability in organisations, which can be classified in organisational terms. In the research already conducted, there are many advantages highlighted for the TOE model. Tornatzky and

Fleischer (1990) refer to the organisation, the environment and technology as the main factors affecting the absorption of brand new technology. The influential factors identified in the Framework are similar to those related to e-government system development. Moreover, the Framework has the capacity for expansion, whereby more factors may be added. It can even be used as the basis of a new framework that will reflect the advantages, disadvantages and drivers in the establishment of optimal e-government services. It can thus help develop and integrate an appropriate model to foster an understanding of development at organisational and national levels. These levels are maintained in different ways by different actors. For example, the national level is overseen by politicians and local and legal bodies, while the organisational level is the concern of an entity's higher management and CEO (Abdalla, 2012). A framework and model are thus designed so that the influences and factors leading to change are all included. Finally, the economic conditions affecting development represent the third factor influencing decision-making and the implementation of new services. This is referred to as the environmental factor (Pudjianto and Hangjung, 2009).

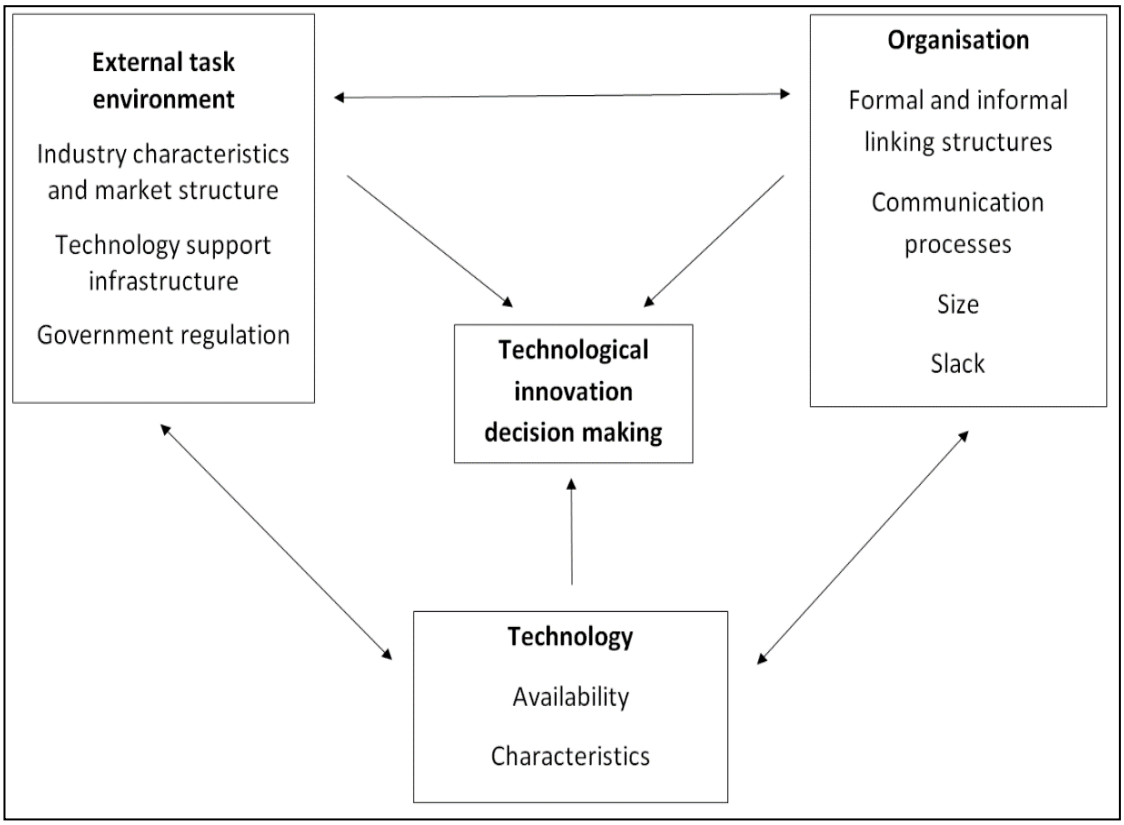

Figure 4.1: The Technology Organisation Environment (TOE) Framework
(Tornatzky and Fleischer, 1990)

4.2.1 Reasons for chosen for TOE framework

The TOE Framework is very flexible and has been used to study the potential or actual impact of various kinds of innovation on organisations. It is basically applied in the case of IT implementation (Oliveira and Martins, 2011) and the adoption of Web services in relation to data collection and exchange (Lippert and Govindarajulu, 2006). However, further research has pointed to a need for more direct influences alongside those already included in the Framework. The most important of these should relate to e-government, where implementation of the TOE Framework is prevalent (Pudjianto and Hangjung, 2009; Pudjianto et al., 2011; Krishnan, and Teo, 2011; Abdalla, 2012). Accordingly, TOE has been used to examine IT adoption, in order to identify the critical factors that impact on the adoption of e-government. In this regard, three main categories of factor are explored (for example, Pudjianto and Hangjung, 2009; Srivastava, and Teo, 2010; Pudjianto, et al., 2011; Abdalla, 2012). Moreover, a number of studies have used the TOE Framework to try and make sense of IT adoption across the three contexts addressed in the Framework (see Table 4.1).

Table 4.1: Studies that have applied Tornatzky and Fleischer's (1990) TOE Framework

Author	Area of IT Adoption	Geographical and Organisational Context	Variables Analysed
Chau and Tam (1997)	Open system	89 firms in Hong Kong	***Technology***: Perceived benefits; perceived barriers; perceived importance of compliance with standards, interoperability and interconnectivity. ***Organisation:*** Complexity of IT infrastructure; satisfaction with existing systems; formalisation of system development and management. ***Environment***: Market uncertainty.
Kuan and Chau (2001)	Electronic data interchange (EDI) EDI in small business	89 small firms in Hong Kong	***Technology:*** Perceived direct benefits; perceived indirect benefits. ***Organisation:*** Perceived financial cost; perceived technical competence. ***Environment:*** Perceived industry pressure; perceived government pressure.
Zhu et al. (2003)	E-Business	3552 firms in the UK, Germany, Denmark, Ireland, France, Spain, Italy and Finland	***Technology:*** IT infrastructure; e-business know-how. ***Organisation:*** Firm scope; firm size. ***Environment:*** Consumer readiness (consumer willingness, Internet);

Author	Area of IT Adoption	Geographical and Organisational Context	Variables Analysed
			competitive pressure; lack of trading partner readiness.
Zhu and Kraemer (2005)	E-Business	624 firms from10 countries (US, Brazil, China, Denmark, France, Germany, Japan, Mexico, Singapore, and Taiwan.	***Technology:*** Technology competence. ***Organisation:*** Size; international scope; financial commitment. ***Environment:*** Competitive pressure; regulatory support. ***E- Business Value:*** Back-end integration; front-end functionality.
Zhu et al. (2006)	E-Business assimilation	1857 firms from 10 countries (Brazil, China, Denmark, France, Germany, Japan, Mexico, Singapore, Taiwan, US)	***Technology:*** Technology readiness; technology integration. ***Organisation:*** Firm size; global scope; trading globalisation; managerial obstacles. ***Environment***: Competition intensity; regulatory environment.
Teo et al. (2006)	E-Business B2B	249 firms from North America	***Technology:*** Unresolved technical issues; lack of IT expertise and infrastructure; lack of interoperability. ***Organisation:*** Difficulties in organisational change; problems in project management; lack of top management support; lack of e-commerce strategy; difficulties in cost-benefit assessment. **Environment:** Unresolved legal issues; fear and uncertainty.
Lin and Lin (2008)	E-Business diffusion	163 large firms in Taiwan	***Technology:*** IS infrastructure; IS expertise. ***Organisation:*** Organisational compatibility; expected benefits of e-business. ***Environment:*** Competitive pressure; trading partner readiness.
Liu (2008)	E-Commerce	156 firms in China	***Technology:*** Support from technology; human capital; potential support from technology. ***Organisation:*** Management level for information; firm size. ***Environment:*** User satisfaction; e-commerce security.
Pan and Jang (2008)	Enterprise Resource Planning (ERP)	Taiwan's communications industry	***Technology:*** IT infrastructure; technology readiness. ***Organisation:*** Size; perceived barriers. ***Environment:*** Production and operations improvement; enhancement of products and services; competitive pressure; regulatory policy.
Oliveira and Martins	E-Commerce	2626 firms in Portugal	***Technology:*** Technology readiness; technology Integration; security

Author	Area of IT Adoption	Geographical and Organisational Context	Variables Analysed
(2009)			application. ***Organisation:*** Firm size (S1, S2 and S3); perceived benefits of electronic correspondence; IT training programmes; access to firms' operational technology systems; Internet and e-mail norms; main perceived obstacles. ***Environment:*** Website competitive pressure; e-commerce competitive pressure. ***Controls:*** Type of industry.
Teo, Lin, and Lai (2009)	E-Procurement	141 companies in Singapore	***Technology:*** Perceived direct benefits; perceived indirect benefits; perceived costs. ***Organisation:*** Firm size; top management support; information-sharing culture. ***Environment:*** Business partner influence. ***Control:*** Industry type.
Ramdani, Kawalek, and Lorenzo (2009)	SMEs with enterprise systems (ERP, Customer Relationship Management [CRM], Supply Chain Management [SCM] and e-procurement)	300 SMEs were chosen in the north-west of England: firms with fewer than 250 employees	***Technology:*** Relative advantage; compatibility; complexity; trialability; observability. ***Organisation:*** Top management support; organisational readiness; size. ***Environment:*** Industry; market scope; competitive pressure; external IS support.
Intan Salwani et al. (2009)	E-Commerce	165 Malaysian firms	***Technology***: Technology competence. ***Organisation:*** Firm size; firm scope; Web technology investment; managerial beliefs. ***Environment:*** Regulatory support; pressure intensity.
Pudjianto and Hangjung (2009)	E-Government assimilation	Korea	***Technology:*** ICT expertise; IT infrastructure. ***Organisation:*** Top management support; organisational compatibility; extent of coordination. ***Environment:*** Regulatory environment; competition environment.
Oliveira and Martins (2010)	E-Business	6964 firms from EU27 countries	***Technology:*** Technology readiness; technology integration; security applications. ***Organisation:*** Perceived benefits of electronic correspondence; IT training programmes; access to firms' IT systems; Internet and e-mail norms. ***Environment:*** Website competitive pressure.

Author	Area of IT Adoption	Geographical and Organisational Context	Variables Analysed
			Contrails: Services sector.
Srivastava, and Teo (2010)	E-Government E-Business	113 countries	***Technology:*** ICT infrastructure. ***Organisation:*** Human capital. ***Environment:*** Public institutions; macro-economy.
Al-Somali, Gholami, and Clegg (2010)	E-Business	180 questionnaires collected from companies in Saudi Arabia	***Technology:*** Technology competence. ***Organisation:*** Firm size; top management support; customer orientation; competitor orientation; technology orientation. ***Environment:*** Customer readiness; trading partner readiness; competitive pressure; regulatory support.
Pudjianto, et al. (2011)	E-Government assimilation	Indonesia	***Technology:*** ICT expertise; ICT infrastructure. ***Organisation:*** Top management support; organisational compatibility; extent of coordination. ***Environment:*** Regulatory environment; competitive environment.
Lip-Sam, and Hock-Eam (2011)	E-Commerce	Among SMEs in Malaysia	***Technology - Organisation - External***
Krishnan, and Teo (2011)	E-Participation E-Government	From over 100 countries	***Technology:*** ICT infrastructure. ***Organisation:*** Lack of citizen orientation. ***Environment:*** Institutional regulations. ***Controls:*** Human capital; economic conditions.
Low, Chen and Wu (2011)	Cloud computing	111 firms in Taiwan	***Technology:*** Relative advantage; complexity; compatibility. ***Organisation:*** Top management; firm size; technology readiness. ***Environment:*** Competitive pressure; trading partner pressure.
Abdalla (2012)	E-Government	Case study from Sudan	***Technology:*** ICT strategy; information and data; IT infrastructure; interoperability. ***Organisation:*** Organisational culture; human capacity; change management; top management. ***Environment:*** Political; cultural; economic; regulatory.
Rosli, Yeow and Siew (2012a)	Computer-assisted auditing techniques and tools (CAATTs)	Professional audit firms	***Technology:*** Technology cost/benefit; technology risk; technology task fit. ***Organisation:*** Size; readiness; top management support. ***Environment:*** Client's Accounting Information System (AIS)

Author	Area of IT Adoption	Geographical and Organisational Context	Variables Analysed
			complexity. ***Individual:*** Performance expectancy; effort expectancy; social influence; facilitating surroundings.
Rosli, Yeow, and Siew (2012b)	Audit firm's intention to use CAATs	Professional audit firms	***Technology:*** Technology cost/benefit; technology risk; technology task fit. ***Organisation:*** Size; readiness; top management support. ***Environment:*** Client's AIS complexity; competitive pressure; professional accounting body regulations. ***Individual:*** Performance expectancy; effort expectancy; social influence; facilitating surroundings; hedonic motivation; habit.
Borgman et al. (2013)	Cloud computing	Global IT executives and senior executives	***Technology:*** Relative advantage; technology complexity; technology compatibility. ***Organisation:*** Firm size; top management support; IT expertise of business users. ***Environment:*** Competition intensity; regulatory environment. IT governance structures: Centralised; federal; decentralised. IT governance process; request; prioritise; fund; monitor; enforce; realign.
Hsu, Ray, and Li-Hsieh (2014)	Cloud computing	623 firms in Taiwan	***Technology:*** Perceived benefits; business concern. ***Organisation:*** IT capability. ***Environment:*** External pressure.
Ahmadi et al. (2015)	The Total Hospital Information System (THIS)	Literature review in the context of Malaysia, related to THIS	***Technology:*** Relative advantage; compatibility; complexity; security concern. ***Organisation:*** Presence of champions; infrastructure; top management support. ***Environment:*** Vendor support.
Aljowaidi (2015)	E-Commerce	Four companies In Saudi Arabia	***Technology:*** Internal IT infrastructure; compatibility; human resources. ***Organisation:*** E-commerce strategy; financial resources; organisational structure & management style. ***Environment:*** Industry adoption jurisdictional issues; external infrastructure; social and cultural beliefs.
Awa, and Ojiabo (2016)	ERP	Survey conducted in the city of Port Harcourt, Nigeria	***Technology:*** ICT infrastructure; technical know-how; perceived compatibility; perceived values; security.

Author	Area of IT Adoption	Geographical and Organisational Context	Variables Analysed
			Organisation: Size of the firm; demographic composition; scope of business operations; subjective norms. ***Environment:*** External support; competitive pressure; trading partners' readiness.
Ahmadi et al. (2017)	THIS	131 Questionnaires from Malaysian public hospitals	***Technology:*** Relative advantage; compatibility; complexity; security concern. ***Organisation:*** IS infrastructure support; hospital size; financial resources. ***Environment:*** Mimetic pressure competitors; coercive government pressure; vendor support. ***Human Dimension:*** Perceived technical competence of IS staff; employees' IS knowledge.

E-government system adoption and development is also dependent on ICT innovation to enhance informatics. As mentioned earlier, TOE is a suitable theoretical framework, enabling an in-depth understanding of the three main contexts of e-government adoption. This Framework is flexible enough to highlight many of the factors potentially influencing the adoption of e-government. The current thesis examines these contexts, namely technology, the organisation and the environment, while adding a fourth dimension; the social context. These are considered critical for the adoption of e-government in Saudi Arabia. The TOE Framework was selected, because it is flexible enough to accommodate several elements derived from the literature in relation to the three main categories it covers. The research question in this current thesis was examined the three context which derived from the literature: the technological, organisational, environmental and social contexts.

4.3 The Critical Factors Influencing E-Government

In this research, the critical factors influencing the development of an electronic system are identified, with particular reference to the selected context, namely Saudi Arabia. The next section therefore reveals these critical factors using two different methodological approaches: qualitative and quantitative, in the light of the texts made available in this chapter, including the Models presented in Chapter Three, i.e. for G2G,

G2C, G2B and G2E transactions and broader perspectives in e-government literature. This chapter will describe the construction of the selected theoretical framework (the TOE Framework) and this lays down a substantial foundation for the adoption of processes to evaluate technological, organisational, environmental and social factors. The Framework is used to build up the body of this thesis in three steps. However, a fourth step is also introduced, as the Model's constructs overlap and merge.

Key aspects debated in earlier studies form part of the current research scope and any factors that could contribute to the study outcomes are also included. Drawing upon multiple contexts, including technology, the organisation, the environment and society, aspects emerge, which could affect e-government development and adoption in general, particularly in Saudi Arabia.

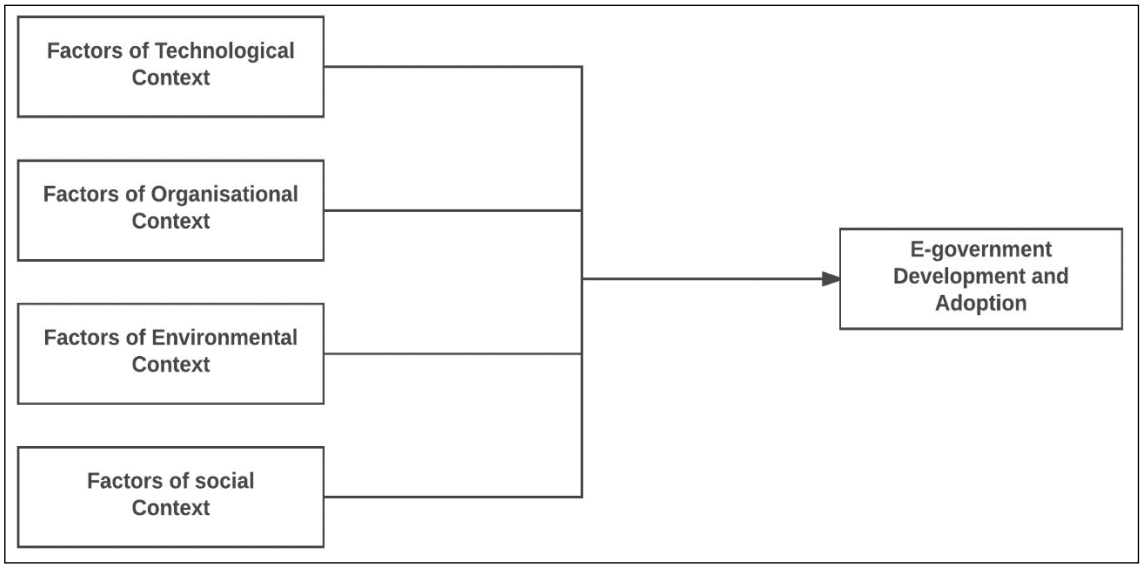

Figure 4.2: Conceptual framework for e-government development

4.4 The Technological Context

The availability of adequate technology is a key element of the e-government successful development system in any setting, since the benefits associated with it, such as ICT infrastructure, network, application, the services are hardly possible in areas where significant technological gaps exist. In turn, this is more often a major contributory factor to the poor performance or even total hindering of e-government. These

technologies challenges are likely to arise in both the developed and developing countries.

Alfarraj, Alhussain and Abugabah, (2013) ICT may be regarded as forming the basis of a successful e-government initiative, which would include the ease and availability of such factors of the technological context such as the Internet; Web-based technologies; telecommunications; connectivity and networks; a proper capacity to process data; databases; hardware and equipment, and corresponding software. Moreover, Alsaif, (2013) ICT technologies deployed to assist e-government initiatives also need to be easily applicable in multiple formats and their security and dependability to deliver at all times is of equal importance.

However, Pudjianto and Hangjung, (2009) stated, it cannot be assumed that technology alone is adequate for the successful development of new processes, since other factors most certainly complement this aspect, including issues related to strategy, information and data management, policy, legislation, etc. Excluding such factors from the equation could contribute to the failure of an initiative. Moreover, Avgerou and Cornford (1998) supported that the proper synchronisation of available technologies is most definitely a major challenge.

Nevertheless, the technology context involves three factors: ICT infrastructure, ICT strategy and the strategy of structure, vision work plan, and the availability of data and information-sharing (the integration system). Adequate management of these aspects will ensure a successful and workable e-government initiative that could result in greater efficiency.

4.4.1 The ICT Infrastructure Factor

The degree and extent of the barriers to establishing an ICT infrastructure in both public and private sector organisations can be monitored via multiple processes. Here, their reliability, affordability, range of e-services and so on, all need to be factored in, in order to ascertain their effectiveness (Gil-García and Pardo, 2005; Chen et al., 2006; Brown and Thompson, 2011). In this regard, organisational and corporate websites can be a major outlet for disseminating government viewpoints (Choudrie et al., 2010), even

though most State-sponsored websites are generally plagued by shortcomings related to their layout and interfaces (Choudrie et al., 2010).

4.4.1.1 The Network Factor

Macker and Corson, (1998. p. 9) stated that "consisted principally of Local Area Networks (LANs), typically referred to as subnetworks or subnets, interconnected via gateways or routers into a larger network of networks". The availability of a network is a technological advancement that constitutes a vital element in the development of an e-government system. It is also the most significant achievement of any organisation for the successful establishment of a long-term ICT infrastructure (Al-Shehry, 2008; Brown and Thompson, 2011). Over 30 years ago, networks existed in a fundamentally quasi-static ICT infrastructure (Macker and Corson, 1998). Correspondingly, it is suspected that efficiency in this area will encourage the private and public sectors to take a more proactive share of the development and construction of associated communication networks and services (Palanisamy and Mukerji, 2012; McLeod and Pippin, 2009; Conklin and Whiet, 2006; Bakry, 2003).

To ensure the continued success of an e-government system in the long term, the existence of an effective and workable ICT network is therefore important. Mitchell and Zmud (1999) recommend this as a key factor enabling the institution of e-government, with efficient outsourcing if required. A very large number of studies support this contention. Thus, the presence of an effective and efficient network is crucial for the deployment of a successful e-government system (Wanga et al., 2004).

4.4.1.2 The Applications Factor

The applications considered a common factor encouraging the adoption of e-government is the way in which enhance and contribute to development between governmental, organisational and public sectors. This is also one of the main elements determining the most significant functions of e-government (Ebrahim and Irani, 2005). Bin Abdul Karim and Khalid (2003) revealed that governments around the world are in fact deploying e-government throughout all sectors, as mentioned previously, with the aim of ensuring greater efficiency in associated processes. Governments that are aware of their citizens' requirements and the practice of establishing e-government tend to be

considered more successful and this has been duly acknowledged by multiple researchers (Zhou, 2004; Bin Abdul Karim and Khalid, 2003; Wang et al., 2004).

Ebrahim and Irani, (2005) e reviewed that the e-government is made up of various layers, such as the 'access layer', with channels for data communication devices, such as mobile phones; digital TV; call centres; kiosks; PCs; teleconferencing, and the Web. The e-government layer is then identified as consisting of portals on websites. Meanwhile, the e-business layer is made up of applications in the form of data systems, such as databases and data warehouses. Finally, the infrastructural layer is the network infrastructure and it consists of servers and the Internet.

4.4.2 The ICT Strategy Factor

A general description of a strategy would involve deciding on the aims and objectives to be addressed (Scholl, 2003). For instance, government departments need to set out a clear strategy if they wish their e-government system to be a success. As per a UN report in 2014, 193 countries surveyed were found to be working on a specific e-government strategy. Developed nations are generally characterised as a role model for the developing world, when drawing up strategies and plans for e-government (UN E-Government Survey, 2014).

However, a national e-government strategy requires attention to the multiple challenges involved in deciding upon a holistic vision, with a focus on the long-term objectives. Moreover, these challenges must be successfully overcome (Bekkers and Homburg, 2005; 2007; Kumar et al., 2007). There may also be multiple goals in an initiative and these could include objectives for providing a range of online services; intended to modernise and improve public services, with increased economic efficiency (Parisopoulos et al., 2009). Additionally, the core objectives of an initiative could be varied and diverse, possibly including such aspects as promoting e-government and the greater engagement of the population in managing government affairs (Alshawi and Alalwany, 2009). Moreover, an effective strategies can help organisations in IS development. Researchers like Al-Azri et al. (2010) and Basu (2004) state that the main aim of an e-government system is to render the governance process more effective and easier for all those associated with it, including the government, citizens and businesses.

However, successful ICT adoption is only possible if an effective plan is formulated to guide the implementation process (Pilling and Boeltzig, 2007).

4.4.2.1 The Vision Factor

A government's vision for itself at a specific point in the future will represent the key to successful implementation of e-government strategies and initiatives (Grant and Chau, 2006). Such a vision is documented as a generalised pathway and endpoint for new project and or development process (Al-Azri, et al., 2010; Parisopoulos et al., 2009). However, as with a mission vision can be a significantly from department to other department (Bennis and Nanus, 1985). Hence, Allen, (1995) stated that there are for point for a such vision which 1) taken into account A reflection of coherency for the future, 2) Motivation and commitment amongst teams, 3) Being realistic, and 4) Being clear. Moreover, the e-government system should focus on facilitating processes for citizens, while the vision should set out clear and concise strategies towards this end (Al-Azri, et al., 2010; Altameem, 2007).

Saudi government has proposed a vision (Saudi Vision 2030) which presented in this thesis in chapter two respectively see sections 2.3 and 2.3.1. As clearly the Saudi government shows their willing to achieve the vision's goals especially in e-government system development context.

4.4.2.2 The Planning Factor

Lam (2005) identified that strategy must share its plan of e-government objectives and without the planning stage, e-government projects are likely to fail. Specific objectives are required and must be applied to determine what is required at each stage of a strategic action plan for an e-government framework. Moreover, each of these stages must also direct successful e-government development (Ebrahim and Irani, 2005). However, in an initiative like the e-Transformation Project in Turkey, the action plan is dynamic and there are discrepancies between the short and long term. Additionally, the priorities involved are taken into account (Akman et al., 2005). The strategic plan for Saudi Arabia indicates that an e-government system should be implemented in modular phases, with sustainable outcomes. Investment plans must also be considered in social, economic, environmental and cultural domains (Yesser, 2015). The objectives of this

action plan must then be made clear and the tasks and projects enabling e-government should be identified and prioritised.

4.4.2.3 The Funding Factor

In a study conducted in Singapore, Ke and Wei (2004) put forward the view that funding plays a significant role in the development of various sectors and a lack of funding becomes a hindrance when trying to implement a plan, given that those required to participate require appropriate training and must be prepared to embrace new concepts. In Saudi context, Altameem (2007) explains that with the application of e-services, specifically e-government systems that run parallel with manual methods, the financial savings for the government become medium-to-long term, as initial costs will be high, but only in the short term and as a one-time investment. Issues regarding e-government therefore arise where funding is deficient (Akomode et al., 2002).

Akomode et al. (2002), after conducting an analysis of e-government development, actually stated that the foremost reason behind the underdevelopment of e-government projects is a lack of funding from external resources. Abdalla, (2012) stated that the e-services are require a medium-long term financial plan on the part of the government. Contrary, it will be a high cost when e-services in the short-term (Okiy, 2010). Nevertheless, the failure to invest enough in this first stage will have a significant impact on the future development of e-government (Abdalla, 2012).

4.5 The Organisational Context

The organisational context of government is based on a collection of values and performance, which in turn establish its structure (Al-Shehry, 2008). Schein (2010) claims that organisational culture consists of the common understanding amongst the management of how their organisation works. Schein also states that the acceptance of change is greatly influenced by organisational culture. The link between organisational culture and organisational development has been emphasised by many researchers. Moreover, Burke (1994) claims that organisational development is the process through which the culture of an organisation experiences significant change.

Denison and Spreitzer's (1991) model emphasises elements of culture that affect an organisation's operation and efficiency. The elements highlighted include flexibility, adaptability and involvement. These help leaders identify which sectors of their organisations require enhanced training and awareness, so that change can be effectively adopted without any obstacles. Two main levels are highlighted in the Al-Shehry (2008) model, collectively referred to as the Paradigm Culture Web. These comprise the ways in which those working in an organisation behave with each other and react to external factors, as well as attitudes concerning information-sharing, collaboration, control, distribution of power and resistance to change at both national and agency levels (Al-Shehry, 2008).

Technology can be effectively adopted if the culture of an organisation changes appropriately, but sometimes this organisational change can have negative results. Leidner and Kayworth (2006), however, demonstrated that the introduction of new technology can change organisational culture, as well as the overall shape of an organisation, the processes within it, the types of jobs it provides and its general operation.

4.5.1 The Senior Management Factor

The development of e-government services worldwide has mainly been made possible by support from top management. This is because it is necessary for top management to create an environment that will promote usage of e-government systems. In general, good leadership qualities are necessary for the successful acceptance and usage of e-government (Lau et al., 2008). More specifically, in Saudi Arabia, top management support and encouragement is claimed to be one of the most vital factors implementing e-government services (Yesser 2012).

Top management may be defined as those leaders who control the functions of an entire organisation at the highest level (Altameem, 2007). Cavaness and Manochehri (1993) explain that top management consists of managers who are capable of creating and implementing policies and regulations. This is the reason why they have such an important part to play in the success or failure of e-government acceptance in public institutions (Al-Azri, et al., 2010; Altameem, 2007). Caldow (2002) adds that e-

government can only be successful if the leadership is involved in its adoption. Al-Azri, et al. (2010) go even further, declaring that it is the absence of effective leadership that obstructs the adoption of e-government. Moreover, top leadership tend to only support IT adoption, if they believe they will especially benefit from it, as in terms of return on investment (ROI) (Al-Shehry, 2008). However, today's managers tend to have a good understanding of ICT and actively support its adoption (Altameem, 2007; Al-Shehri and Drew, 2010). The opportunities created for an organisation through ICT adoption are therefore generally known to the top management of modern organisations (Al-Shehry, 2008; Altameem, 2007).

Leadership qualities, such as awareness, strategic thinking and dedication to e-government projects are in fact necessary for the successful completion of e-government implementation projects (Ojo et al., 2007). Moreover, there are occurs due to ignorance of employees' knowledge and skills in developing countries, which eventually slows down the process of e-government development (Al-Azri, et al. 2010). Every stage of e-government system development must be effectively supervised by the top management, with managers being aware of the technology adopted, so that can clarify concepts to employees; thus developing their awareness and encouraging them to engage in the process. Initially, leaders need to guide and support the implementation process, but in the later stages, management need to ensure that the organisation has adapted to the new technology being implemented (Aldrich et al., 2002).

4.5.2 The Organisational Culture Factor

The relationship between organisational Culture and ICT acceptance in different government organisations has been addressed in several different organisational culture models. The heads of organisations can then use these models to analyse the cultural behaviour of organisations, in order to find a means of ensuring that technology acceptance is not obstructed. One of these models was formulated by Schein (2010) to evaluate the fundamental elements of a culture. Three major elements are subsequently highlighted in Schein's model: basic assumptions, espoused values, and artefacts. Al-Gahtani et, al., (2007) identified that the leadership of an organisation can learn about the cultural elements within that organisation and study the connections between the assumptions and common business practices that exist within it.

Al-Shehry et al., (2006) stated that e-government projects require considerable financial resources and can take a long time to complete. As a result, it is necessary to develop an effective plan for e-government system development in Saudi Arabia. The public sector and its organisations need to adopt a long-term development plan for e-government project implementation, with the provision of the required funding. However, e-government projects in public organisations in Saudi Arabia need for an effective IT plan (Alfarraj, 2013). Nevertheless, the Saudi government has initiated its National Transformation Program 2020 to fulfil the Saudi government's long-term vision. It also contains a five-year plan for ICT development in the country (Saudi Vision 2030, 2016). It is therefore necessary for every organisation in Saudi Arbia to create such a strategic ICT plan, in accordance with the government's long-term vision. Steps should consequently be taken to develop ICT systems in the government sector, within a given time period, so that high quality e-government services can be provided (Saudi Vision 2030, 2016).

4.5.3 The Factor of Data-sharing among Government

E-government information and data have various approaches can be adopted. These include creating data structures and then receiving feedback from users (Gil-García and Pardo, 2005). According to Redman (1996), the importance of data accuracy and quality has been increasingly brought to the fore. These elements can in fact have an adverse impact through poor data quality, leading to escalating expenditure and reduced data sharing (Altameem 2007; Al-Shehry, 2008), with even worse implications for the decision-making process. Altameem (2007) and Al-Shehry (2008) have discussed how for these issues, standard measurement techniques have yet to be developed in the science of data quality. Nevertheless, well-managed data is identified with numerous benefits, such as information exchange without the need to process data, avoidance of data replication, and resolution of data storage problems. As a result, data-processing overheads and heavy paperwork load could be curtailed in the public sector (Dawes, 1996).

4.5.4 The Change Management Factor

Change management is considered as a critical factor in successful e-government implementation by researchers such as Lessa et al. (2015) and Stojanovic, Stojanovic and Apostolou (2005). This is because change is associated with e-government, which is why awareness is essential. Organisational change can also be successful if a vision has already been set. Strong leadership will then help implement change efficiently (Mabin, Forgeson and Green, 2001). However, change management can also be negatively affected by top management, if it persists in a traditional management style, applying outdated processes and procedures.

4.5.4.1 The Business Process Re-engineering (BPR) Factor

Hammer first introduced the term 'business process re-engineering' (BPR) in 1990. He stated that traditional methods of computerising institutions only led to the automation of existing processes, with no new techniques or processes being created. In contrast, BPR tries to enhance the performance of an organisation by effectively using ICT to develop new organisational structures and processes.

Output can also be enhanced by minimising costs in terms of finance and time, as automated machines can improve the efficiency of production units by replacing humans with ICT systems, which are generally less expensive to maintain. However, these processes need to be constantly supervised and controlled (Heeks 2001a) and so workers must be given the necessary training, and work processes need to be reviewed and reorganised (Weerakkody, et al., 2011). Therefore, managers in the public sector can learn a great deal from the experience of the private sector, with a view to overcoming any obstacles preventing it from utilising the full potential of ICT.

However, the slow pace of technology and innovation adoption have led to criticism being levelled against governments (Mohan and Holstein, 1990). In addition, a large number of re-engineering failures occurred in the private sector in the 1990s (ibid.). Heeks (2001) ventures that in any case, many government processes could be enhanced by better management and reduced cost. At various levels and in certain sectors, governments could benefit from being more creative and ensuring good quality and cost-effective service. A phase of transformation would thus change business processes

in government, as the private sector has more experience than the government in applying BPR.

4.5.4.2 The Staff Training Factor

Following the introduction and rapid revolutionising effect of technology, each new technology emerging in the same way has eventually been superseded, due to the development factor. This is why the education and training of employees in contact with technology has become a pressing need, as observed and stated by Choudrie et al. (2005). Casalino (2014) also puts forward the view that employee training plays a vital role in any sector these days and more specifically, where e-government is concerned, so that employees can address and overcome any obstruction or incident that may arise, having been prepared for it in their skills training and mental attitude. Researchers like Al-Azri et al. (2010) and Abdalla (2012) have revealed a direct correlation between training and success, whereby training proved to be an essential element; directly affecting skills implementation and outcomes of e-government. Meanwhile, researchers such as Srivastava and Teo (2010) and Alshehri and Drew (2010) found education and training to be highly necessary for the success of e-government.

4.6 The Environmental Context

According to Ahn (2010), Bolgherini (2007) and Bakry (2004), the environment represents a topic with economic, cultural, regulatory and political characteristics. Moreover, Bekkers and Homburg (2005) illustrate in their research how environmental factors include an organisation or government unit's cultural environment. The economic environment of Saudi Arabia's government has experienced rapid expansion over several decades, due to the nation's oil production and investment in the ICT sector (Alshehri and Drew, 2010; Al-Ghaith, et al., 2010). However, the public sector has continued to experience limitations in its technology use, due to the absence of proper budgeting and more recently, a diminished economy (Mamaghani, 2010; Braund et al., 2007).

4.6.1 The Policy and Rules Factor

To deal with the changes triggered by e-government systems, action is required on the part of the government, politicians and the legislature. New legislation, for example, could include electronic signatures, the protection of archived data and monitoring of e-government innovation to provide structure in the public sector (Bekkers and Homburg, 2005). The regulatory framework will also need to be modified to include extensive changes, ranging from procurement to service delivery (Heeks, 2001). In addition to the above, Weerakkody et al. (2011) and Korteland and Bekkers (2007) point to the legal risks arising from ICT, which can make public agencies vulnerable to certain liabilities. Therefore, the requirement is not only to develop new legislation covering e-services, but also to review and update it regularly, thereby preventing any unforeseen outcomes or project delays (Okiy, 2010). The concept of e-government will drastically alter the way in which business is conducted within the public sector, thus leading to an increasing number of new legal issues (Akomode et al., 2002). To quote one example, the progress of e-government in the UK has been stalled due to the prevailing data protection and privacy laws in that context (Bonham et al., 2003).

The government will consequently function as a key player by ensuring that an appropriate legal system is in place. This is important when ascertaining the potential level of success of e-government processes and programmes (Basu, 2004). Dealing with e-government, according to Ndou (2004), is like signing a contract. Therefore, it is important to identify the policies, legal implications and rules of this contract, such as concerning electronic signatures; electronic archiving; freedom of information; data protection; computer crime; intellectual property rights, and copyright issues.

4.6.2 The Factor of the Cultural Environment

Culture comprises social background; social characteristics; education; religion; language; experience, and various expectations, such as of an e-government system. It can therefore be the foremost obstruction to the introduction of e-government in developing countries (Abdalla 2012). The implementation of e-government systems in Saudi Arabia is especially difficult, due to cultural factors arising from religion, tribalism and the way in which the entire government has such a strong influence on the

regime, in terms of regeneration and the espousal of technology (Al-Shehry, 2008). However, due to the presence of Islam‘s Holy Mosques in Saudi Arabia, it is a country of unique and high esteem in the Islamic world (Al-Shehry, 2008). Additionally, the tribal nature of Saudi society affects the perceptions and attitudes of users regarding the adoption of innovation, for example, in terms of using new technologies. This is partly due to the consequent desire to maintain the status quo, with its existing hierarchies and customs. It is also partly due to an unwillingness to cross established boundaries for the purpose of greater openness and information-sharing (Alshehri, Drew and Alfarraj, 2012).

National culture and societal norms direct organisational culture and consequently influence technology use. Therefore, before developing an e-government system, it is important for these factors to be thoroughly studied. In order to comprehend the acceptability of e-government amongst its citizens, Internet usage patterns within Saudi Arabia constitute a key factor (Alshehri, and Drew, 2010). However, free access to certain ‘objectionable’ material on the Internet, which runs counter to Saudi culture, has been strongly opposed by Saudi leaders on numerous occasions. As a result, a plan was devised after a series of debates and discussions, whereby all such content was filtered through a solid filter system, once the Internet had been made freely available to the nation’s inhabitants. This is one example of how strong the social and cultural factors are in KSA, with regard to their influence on accepting, adopting and implementing new technology (Al-Gahtani, Hubona and Wang, 2007).

4.7 The Social Context

According to Fuchs (2007), the social interaction of a nation’s citizens is largely affected by the respective country’s cultural norms, attitudes, beliefs and behaviour, which also extends to the public and government sectors. As observed by Kulviwat et al. (2007), if an innovation is publicly, as opposed to privately consumed, the social influence and intention to adopt tends to be more effective. Innovation and organisational creativity are factors that are not easy to observe; they are rather dependent on a myriad different contextual and social influences (Agars et al., 2008). It is nevertheless assumed for this research that participating e-government systems respond to social influence, which includes embracing new technologies.

4.7.1 The Factor of Lack of Awareness

Awareness is an important element influencing the development of e-government systems and it has in fact been identified by many researchers, such as Dourish and Bellotti (1992), who describe it as, "an understanding of the activities of others, which provides a context for your own activity". Several researchers have stressed the importance of awareness campaigns (Al-Ghaith, et al., 2010; Al-Azri, et al., 2010; Al-Omari, 2006; Choudrie et al., 2005, 2003; Fang, 2002). Therefore, in addition to development, there needs to be a focus on raising awareness for e-service development in Saudi Arabia (Al-Ghaith, et al., 2010).

4.7.2 The Factor of Lack of Trust

Trust is considered to be a significant factor impacting on the development of e-government systems. Trust and security concerns have been stressed in the literature as having implications for e-government system development and adoption. Nevertheless, in terms of e-government systems developing objectives to improve the quality of their services, e-services should be integrated into all government, business and public sectors (Al-Khouri, 2012a; Al-Ghaith, et al., 2010; Colesca, 2009; Al-Khouri and Bal, 2007).

4.8 Summary

This chapter has presented TOE framework relating to e-government system development. In this way, a conceptual framework will be proposed, taking into account technological, organisational, environmental and social contexts, with their associated factors and sub-factors relating to the development of an e-government system in Saudi Arabia. The basic goal of the abovementioned conceptual framework is to determine the impact of these factors on e-government system development and therefore its implications for the public sector, business sector and government organisations. In short, the efficient and effective development of a conceptual framework for the establishment of e-government is believed to be facilitated by considering specific key contexts. The next chapter will now present the research methodology and methods applied in this study.

Chapter 5: Research Methodology

5.1 Introduction

In the previous chapters comprising the Literature Review, critical factors were identified and explored for the purpose of analysis. Four main context were identified as bearing upon the TOE framework constructed in this study, as already discussed earlier: technological, organisational, environmental and social. The basic goal of this framework is to determine the impact of these factors on the development of e-government into Saudi Arabia's Ministries, other government organisations, and the public and private sectors.

This chapter will discuss at length the most significant points relating to the overall research methodology. Moreover, this discussion is intended to introduce the research approaches, research paradigm, research design, data collection and data analysis. It will present several options and strategies that a researcher can employ to address a particular issue. However, decisions over the methodology in this instance were hinged on the overall research aim, namely to examine the critical factors to be considered in a conceptual framework for introducing e-government in Saudi Arabia.

5.2 The Research Design

The current research design is intended to link the primary research data with the research questions and build an analysis around key discussions in the study. Gravetter and Forzano (2012) explain that the research design can follow the research purpose as exploratory or explanatory. It takes into account key aspects, such as the research philosophy, approach, strategy and methods. Sekaran and Bougie (2016) describe how the question words, 'Why?' and 'How?' are used in exploratory research. Therefore, the aim of explanatory (or descriptive) research is to find the themes and potential links in the research data, so that the research framework can be designed and the research question addressed. When there is little existing knowledge about a situation, exploratory research is employed to investigate the research topic (Oates, 2006). A qualitative (descriptive) approach was adopted in the present case. Generally speaking, the research design is a framework that covers the relevant components to be considered, when attempting to solve a research problem (Lake, 2009).

To expand more, Creswell (2008) states,

> Both quantitative and qualitative data concurrently integrate or merge two databases by transforming the qualitative themes into counts and comparing these counts with descriptive quantitative data. In this case, the mixing consists of integrating the two databases by actually merging the quantitative data with the qualitative data.

The primary reason for conducting explanatory research is to enhance the robustness of a proposed research design. This is so subsequent results may be informed through different data collection methods, as a means of understanding specific research issues from varying perspectives (Johnson and Onwuegbuzie, 2004; Kaplan and Duchon, 1988; Jick, 1979). The current study adopts this particular strategy to gather relevant data, employing two different levels of explanatory data collection governmental and social levels.

To answer research questions seeking to identify the critical factors impacting on the development of e-government, formulated according to the TOE framework and addressing technological, organisational and environmental contexts, the social context is also included, in order to ascertain the user's perspective. The investigation is intended to produce a conceptual framework for the development process. The qualitative explanatory data is thus collected and applied in an attempt to develop a deep understanding and description from the point of view of those interviewed for this study (Ticehurst and Veal, 2000; Zikmund, 2003; Al-Shehry, 2008: Alfarraj, 2013; Aljowaidi, 2015). Although e-government has been extensively studied, there is still very little known about e-government system adoption, development, projects, strategies or vision in the Saudi context.

With this in mind, the research governmental staff participants were interviewed about their work experience and perspectives, so as to try and identify the primary factors for developing e-government, with particular attention to the contexts of technology, the organisation, the environment and society and their influence on the failure or success of e-government development. Consequently, at the level of user personnel and members of the public using such a system, it examined their views, opinions, experience, suggestions, and needs.

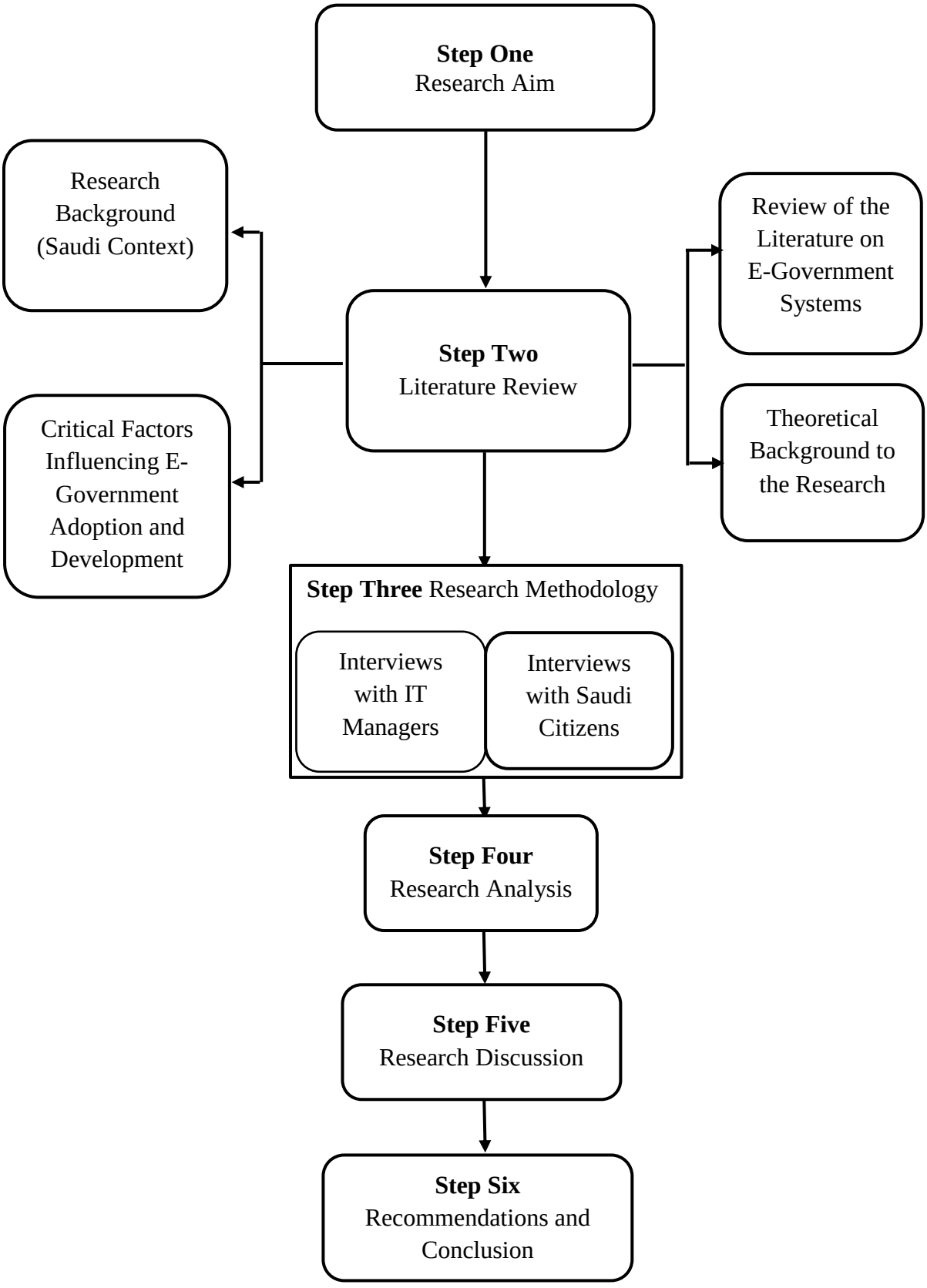

Figure 5.1: Research Design

5.3 The Research Philosophy

Critical approaches emphasise that social issues are embedded in history, which is continually being produced. Although human beings are capable of changing their social and economic conditions, the critical approach views this capability as subject to the influence of cultural, social and political success. Thus, critical approaches are mainly seen as a critique of social systems and as pointing to long-standing social problems, such as power patterns. They also offer solutions to problems (Myers and Avison, 2002).

An investigation of an IS under this paradigm would lead to a deeper understanding of the context of this system and of the relevant processes or social phenomena influencing IS in general (Walsham, 1995; Crotty, 1998). According to Creswell (2003), interpretive research investigates participants' views of a situation under study.

5.3.1 The Critical Paradigm

The critical paradigm adopts the epistemological view of historical realism, stating that reality is shaped by social, political, ethnic and gender values (Brincat, 2012). According to the historical paradigm, the reality of human behaviour is malleable and has been shaped and cemented by social conditions. It is thus being constantly influenced by internal entities, namely through the interaction of language and the outside world. The epistemology of the critical paradigm is subjectivism, which states that real world phenomena are linked with social perceptions. According to this philosophy, individuals are born into a system or culture (Scotland, 2012). Moreover, as most social and psychological theories are developed by a minority, exclusion, privilege and dominance are embedded in the development of this reality. The critical paradigm attacks the foundations of this, aiming to promote equality in society by challenging the underpinnings of social, political and culturally-oriented behaviour (Scotland, 2012).

The critical paradigm cites human actions as its influence and addresses the societal problem of social injustice. The methodology applied in the critical research paradigm examines underlying societal values and assumptions, while also implementing social actions to address social injustice. The methodology associated with the critical paradigm is the identification of phenomena, in order to implement change. People are

thus made aware of situations, with change being realised by repeated actions.. Moreover, participants are stereotyped by imposing a homogeneous identity on sample groups, whereby it is assumed that they are unaware of the cultural or political influences on their actions (Scotland, 2012).

5.3.2 The Positivist Paradigm

The positivist is a paradigm where data are quantified, hypotheses are tested, and objective measures are implemented (Muijs, 2010). Moreover, reality is considered as distinct from the researcher and the assumption is that it can be directly observed (Wimmer and Dominick, 2013). Therefore, ontologically speaking, the positivist paradigm is linked with the view that social reality is objective and external. As a result, the axiological beliefs represent the positivist research paradigm as etic, with the researcher maintaining an objective stance in relation to the collected data. Epistemologically, the quantified data, facts and information constitute sufficient knowledge (Wayhuni, 2012).

Therefore, the positivist paradigm can be construed as an approach that applies scientific methods to social phenomena or behaviour. Accordingly, it must be supported by empirical data and logical reasoning, with the supporting evidence presented being indisputable and authenticated (Creswell, 2013). However, there are some negative implications associated with the positivist paradigm that makes it inappropriate for exploratory research. Most of its weaknesses are due to a reliance on naïve realism and empirical data. As a result, various modifications are generally made to the positivist paradigm in contemporary research (establishing a post-positivist paradigm) A.

Contrary to the positivist paradigm, the post-positivist paradigm acknowledges that personal values and culture have an influence on the researcher’s perceptions and this will impact on the research work. Such cultural values and personal opinions have both a positive and negative influence on the researcher. However, the post-positivist paradigm attempts to minimise the negative influence of the researcher’s perceptions (Lederman and Abell, 2014).

5.3.3 The Interpretivist Paradigm (Current Paradigm Selected)

The interpretivist research paradigm is common to social science research and stresses the need to explore the meanings underlying or embedded in human behaviour. It abides by the principle of the hermeneutic circle, where collaborative meaning is developed through repetitive cycles of data interpretation (Bryman, 2008). Therefore, it provides in-depth knowledge and insights into data. It is also beneficial when endeavouring to understand societal issues and problems, applying the principle of contextualisation. Contextualisation implies that every society is unique and has developed over time. As such, each society needs to be understood and studied separately (Mora et al., 2012).

The interpretivist paradigm considers a concept that is absent in the positivist paradigm, such as freedom of choice and consciousness. It states that the world can be interpreted purely through logical reasoning and not every finding is evidence-based. For example, people's perceptions of reality can only be understood via a qualitative approach. The interpretivist research paradigm seeks to gather knowledge from people's understanding, comprehension and experience of an event. Nevertheless, a major criticism of this theory relates to validity, reliability and generalisation in social research (Marcen et al, 2013). Other criticisms of this paradigm are associated with the impact of researcher bias on the findings and the intervention of the researcher in the everyday lives of the research participants (Kura, 2012). It is nevertheless a paradigm that is frequently adopted for research topics pertaining to culture, language use and human interaction. In this regard, the researcher identifies with the participants and reflects on their shared beliefs and values.

As the interpretivist research design is related to in-depth research into a subject, the most commonly used research methods in interpretivist research are the case study and interview methods (Lederman and Abell, 2014). This paradigm is therefore of most benefit when seeking to understand and interpret human behaviour and phenomena (Al-Shehry, 2008; Alfarraj, 2013). It is generally associated with qualitative data and in the present case, such data were collected via in-depth interviews, conducted to investigate e-government system development in the context of KSA. As a result, this current thesis investigates the perspectives of staff employed in several Saudi government Ministries, who are currently, or have been actively involved in e-government implementation.

5.4 The Research Strategies

A research design is a holistic concept consisting of different processes and focused on examining a social phenomenon. In relation to human beings, such understanding is highly complex in nature and may require the application of a range of research methods, i.e. qualitative, quantitative, or a combination of the two (Gable, 1994). Furthermore, data collection via different instruments and data analysis are required to address specific research questions and meet defined research aims (Creswell, 2003, 2013; Bryman and Bell, 2007). The basic proposal to initiate an empirical inquiry is actually to power a fresh understanding of a particular social issue by making use of various research strategies and methods. In general, social science research is regarded as an 'open-ended' process that seeks to seriously explore a social issue, moving from one end to the other in response to research questions. This takes place via a number of processes that may include data collection and subsequent analysis (Yin, 2013). The current study adopts a similar approach in its investigation of Saudi e-government development.

The literature review is the starting point of academic research, as it assists in locating and acquiring existing knowledge, theories, research approaches and debates, while also identifying gaps in these studies, which the researcher can then endeavour to bridge (Bryman and Bell, 2007). A literature review is therefore a stage which is primarily triggered by secondary sources. However, such knowledge may not always be directly relevant to a proposed research study, but will be available from many helpful sources, like research papers, journal articles, reports and books (Collis and Hussey, 2013). In addition, an initial review of the literature will be instrumental in realising the aims and objectives of the proposed research. A thorough literature review was therefore conducted in the present research, in order to identify any gaps in the existing literature and propose specific directions for the current study.

Primary research data are data that are directly relevant to a study. Collis and Hussey (2013) explain that original or primary data represent a dataset that is directly obtained by the researcher when attempting to answer specific research questions. In other words, these are data that directly address the research aims and objectives. There are various methods by which primary data can be collected, such as through case studies; surveys;

field notes; laboratory experiments; archival research; action research; longitudinal studies; grounded theory (Straus, Corbin, etc.), and cross-sectional studies, amongst others (Saunders et al., 2009; Bryman and Bell, 2007; Saunders et al., 2009; Orlikowski and Baroudi, 1991). The matter of selecting an appropriate approach is hinged on the proposed research aims (Avison et al., 1999), with different instruments subsequently being used to gather relevant data; for example, observations, interviews (either in-depth or semi-structured interviews), and survey questionnaires (Saunders et al., 2009; Bryman and Bell, 2007). Moreover, primary data can be gathered through quantitative or qualitative means, whether used separately or combined.

5.5 Research Methods

5.5.1 Quantitative Methods

Quantitative approaches may be defined in relation to empirical insights into a social issue, studied by carefully controlling what it aims to explain (Altameem, 2007). A quantitative approach is attentive to questions of 'How much?' or 'How often?' (Nau, 1995). Creswell (2003; 2007; 2013) therefore argues that this approach is most suitable for identifying factors that impact on the outcomes of a social issue. Quantitative research, on the other hand, has been defined by Creswell (2013, p.4) as *"a means for testing objective theories by examining the relationship among variables. These variables in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures"*. In quantitative studies, theories are tested deductively using existing knowledge to develop and create hypothetical relationships and propose results; all of which can help produce scientific findings. Myers (1997) argues that a qualitative methodology is more meaningful for studying IS, since it enables the researcher to employ such methods as document analysis, interviews and observation to examine and define a social problem.

As a result, it permits insights to be drawn from the best inferences that can be made, or else ensures the usability of an intervention. In addition, the quantitative approach has much to offer in terms of 'operation'. Laboratory experiments, surveys and statistical models are just a few examples of this. In fact, quantitative data analysis relies very heavily on statistical principles. This is a quantitative method that can be used in mail

questionnaires, allowing the investigators to collect data from larger, more representative samples of consumers. Furthermore, it does not require any content analysis.

5.5.2 Qualitative Method (Current Method Selected)

Qualitative methods are reasonably well-known today among information scientists, as they are usually the most appropriate means of studying topics like e-government. This is evident from the majority of articles published on the subject (Alcaide-Munoz and Rodriguez-Bolivar, 2015). Qualitative research methods mainly deal with descriptive data, collected interactively using qualitative means. Oseni, Dingley and Hart (2015) IS for maximum impact. (Chen and Chou, 2015) it can sharpen the understanding of a pertinent research issue through such qualitative methods and offer empirically informed ways of addressing it. Qualitative approaches are also helpful for constructing theory, policies and social understanding. As a result, they may be considered especially helpful for gaining a deeper understanding of issues arising in relation to IS, beyond simply making predictions (Oseni, Dingley and Hart, 2015). Qualitative research can be characterised as a means of exploring and understanding the meaning assigned by individuals or groups to a social or human problem (Creswell, 2013).

The qualitative research process involves emerging questions and procedures; data which are typically collected in the participant's setting: "data analysis built inductively, moving from particular to general themes, and the researcher interpreting the data (Creswell, 2013, p.4). However, qualitative methods are not without their drawbacks. For example, the depth and richness of the data can sometimes create serious problems for analysis. More importantly, rich data are open to numerous interpretations. Similarly, human bias (of both the researcher and the participants) may become a real threat. Lastly, as it focuses on naturalistic contexts, these may be continually evolving and therefore risk affecting the validity and reliability of the research (Cornford and Smithson, 2006). Table 5.1 illustrates the main strengths and weaknesses of qualitative research.

Table 5.1: The qualitative approach - strengths and weaknesses

Strengths	Weaknesses
It provides an opportunity for the researcher to obtain a better understanding of nature and intricate processes (Benbasat et al., 1987; Maykut and Morehouse, 1994; Silverman, 1998).	Data can be read and explained in different ways, which reduces the accuracy of interpretation (Cornford and Smithson, 1996; Silverman, 1998).
It enables the researcher to gain an in-depth understanding of the phenomena within a particular setting (Creswell, 2007; Myers, 1997; Silverman, 1998).	Data collection and data analysis can demand a great deal of precious time (Lee, 1991; Miles and Huberman, 1994).
Researchers are able to examine meanings provided by a particular audience, enabling them to deal with issues in a more profound way (Silverman, 1998).	Interviews with participants are time-consuming, creating issues for individuals who have little time (Miles and Huberman, 1994).
Researchers can study phenomena as they occur in an environment where little knowledge exists (Benbasat et al., 1987; Maykut and Morehouse, 1994; Silverman, 1998).	The sample sizes are the smallest in this type of research and therefore, this reduces the potential for generalising, controlling and deducing information (Cornford and Smithson, 1996; Lee, 1991; Maykut and Morehouse, 1994; Silverman, 1998).
It helps reduce obstacles between the user and researcher (Creswell, 2007).	The collected data can be disorganised and unstructured (Lee, 1991).

This research employs a qualitative method, applied within the public sector and in four Saudi government Ministries. The data were collected from two main groups: senior IT personnel working in government Ministries and ordinary members of the public likely to use an e-government system. These two groups were investigated to gather their perspectives of e-government, thus identifying the factors bearing upon e-government development. This method supports a phenomenological approach, where the need for in-depth information and diverse individual perspectives make it difficult to employ quantitative methods (Creswell, 2013).

5.5.2.1 The Interviews

In the present research, predetermined plans were set out for conducting the interviews. These interviews were aimed at discovering interviewees' perceptions of e-government

systems and services, and the reasons why they thought that the Saudi government was seeking to develop such a project. Their views on this as an innovative instrument for government operations were also gathered. Furthermore, the interviews were used to identify issues pertaining to e-government development; taking into account technical, organisational, environmental and social aspects.

According to Marshall and Rossman (1995, p.83),

> elite individuals are considered to be influential, the prominent, and the well-informed people in an organization or a community and are selected for interviews on the basis of their experience in areas relevant to the research.

The interviews were conducted between April to August 2014 at two levels: first at Ministry level, so that deeper insights could be gained from interviewees consisting of senior employees involved in existing e-government in Saudi Arabia, and second, at the level of the user, so that insights could be gained from Saudi citizens using e-government services. After the interviews were analysed, there was substantial alteration to the proposed framework, leading to the identification of various critical factors.

The interviews were carried out individually with participants initially contacted face-to-face, via Skype, or by telephone, whether directly, or indirectly through the secretary's office of their respective departments. The interviewees were provided with an overview of the research, an idea of the kind of questions they would be asked and an explanation of the kind of information required. They were also given a letter of consent to sign before the commencement of the interviews. This letter contained information on the researcher's background and the purpose of the research. It also assured the interviewees that their information would remain confidential and that their names would not be disclosed. The interviewees were asked if the interviews could be audio-recorded, but were reassured that the recording could be stopped at any time and at their request.

Therefore, all 16 interviews were conducted at the four selected Ministries and with various employees from different IT departments in these Ministries. Moreover, in-

depth interviews were conducted with 10 Saudi citizens to evaluate their experience of e-government services provided by the Saudi Ministries (see Table 5.4).

Table 5.2: Interviewee codes for Ministry employees

Name of Ministry	Codes for the Participating Ministry Employees
Ministry of the Interior (MOI)	PE1, PE2, PE3 and PE4
Ministry of Education (MOE)	PE5, PE6, PE7 and PE8
Ministry of Municipal and Rural Affairs (MOMRA)	PE9, PE10, PE11 and PE12
Ministry of Health (MOH)	PE13, PE14, PE15 and PE16

The unique development of e-government in Saudi Arabia was covered in full via three kinds of interview question, presented in three sections of the interview questionnaire. The first section concentrated on the technology aspect; the second, on the organisational aspect, and the third, on the environmental aspect. The conceptual interpretation was based on the reasons why greater importance was attached to procedures and ICT strategies.

Table 5.3: Interviewee codes for participating users

Users Interviewed	Codes
Male Participants	PM1, PM2, PM3, PM4and PM5
Female Participants	PF1, PF2, PF3, PF4 and PF5

5.5.2.2 Selection of Interviewees and Ministries

In selecting Ministries for this research, the author sought to obtain data from Ministries that had recently implemented e-government services. This was because it was thought that the interviewees would be able to provide the latest information in response to the interview questions. The four Ministries were chosen according to their potential to shed light on the usage and capacity of the e-government services already introduced. For example, some of the Ministries investigated were keen to adopt e-services, while others were only implementing a few limited e-services. These four Ministries were also selected due to the value of their e-services to the user in Saudi Arabia. As a result, they

offered interactive e-services, moving towards more comprehensive e-government adoption. In addition, Ministries with significant e-services and wide adoption of e-government were more likely to produce a high volume of data for the contexts of the TOE Framework adopted in this study and first constructed by Tornatzky and Fleischer (1990). Moreover, Ministries with extensive e-government could serve as guidance for other Ministries to develop their own e-government.

5.5.2.3 Translation of the Interviews

As mentioned earlier, the stage of designing the interview questions also involved translating them from English into Arabic, as it was certain that the interviewees would be Saudi nationals, with Arabic as their mother tongue. Translation was therefore a necessary step, as the participants needed to be able to fully understand the questions, in order for the interview process to be successful. Here, it was ensured that the translation steps were carried out efficiently and to a high standard by the researcher, who is a native Arabic speaker.

Therefore, the first step involved writing the interview questions in English, with the supervision team giving feedback, before the final version was produced (Appendix C and G). Secondly, the interview questions were translated into Arabic by the researcher himself. His translations were then reviewed by two Saudi PhD students studying linguistics in the UK and the results were subsequently integrated into the final version (Appendix F and H).

5.5.2.4 Process of Interview Validation and Findings

One validation technique was used by the researcher, namely thematic analysis (see section 5.6) to validate the methodological process. The aim of the research was met at this stage of the study, since the most important factors affecting e-government systems in Saudi Arabia. For external validation, however, the study findings needed to be transferable. This is why a demonstration step was carried out by the researcher, in consideration of Saudi's government Ministries. This step aimed to make certain that any framework produced as a result of this research would be flexible and capable of providing assistance in the formulation of decision-making processes (See figure 8.1). It

was proposed that this stage could be successfully achieved, the outcomes of the study would be applicable to similar situations.

5.5.2.5 Literature/Document Review

There is a plethora of documents accessible on the Internet and so the author recognised the need to be intellectually alert when accumulating such information. This included, but was not limited to White Papers; studies; minutes of meetings; policies; strategies; presentations; reports; project plans, and reference material. One of the primary benefits of utilising such documents is that they are relatively stable and can be reviewed over and over again.

5.6 Thematic Data Analysis

Yin (2013) clarifies that data analysis involves categorising, examining and tabulating findings to address research points. The analytical process for the qualitative approach has various methods of analysis, such as thematic analysis, grounded theory, content analysis and narrative analysis. Thematic and content analysis are classified as classic analytical approaches for qualitative research (Vaismoradi et al., 2016). In fact, thematic analysis "is a method for identifying, analysing, and reporting patterns (themes) within data. It minimally organises and describes your data set in (rich) detail" (Braun and Clarke, 2006, p.6). It involves identifying context from data and key characteristics in a coding process, out of which meaning is elicited.

Both thematic and content analysis is interpretive and describes the participants' perspectives. However, some researchers believe that thematic analysis is the most appropriate method of analysis, employing a lower level of inference and interpretation (Vaismoradi et al, 2016). In narrative analysis, however, the researcher presents the findings and explains the participants' words. However, this approach is limited, as it specifies the presentation of the findings, rather than the process of analysis as a means of deriving reasonable meaning from the findings.

The current research involved data analysis using tools of thematic analysis. In this method, the data collected from interviews and through other qualitative methods is

analysed on the basis of specific themes, drafted from the research context. Based on quotes and subjective interpretations of interview transcripts, perspectives are derived and these must be arranged thematically, for the purpose of drawing out themes from the findings. These themes are informed by a deep and critical understanding of the data collected and then need to be analysed with the help of a conceptual framework and the Literature Review, so that they can be framed. Thematic analysis "is a form of pattern recognition within the data, where emerging themes become the categories for analysis" (Fereday and Muir-Cochrane, 2006, p.4).

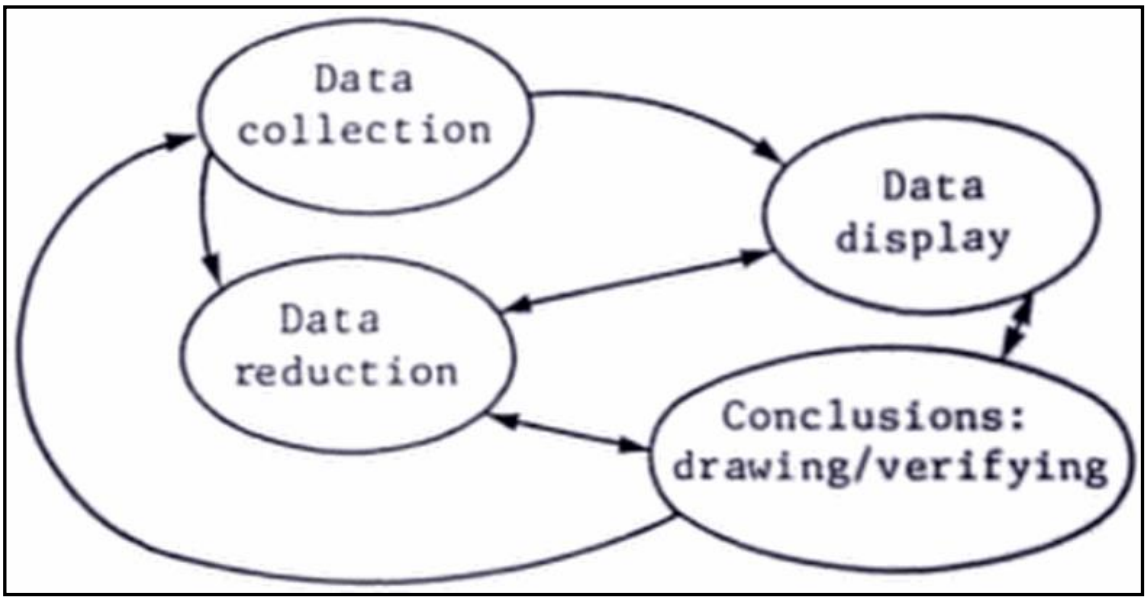

Figure 5.2: The thematic analysis model
(Source: Miles and Huberman, 1994, p.12)

The thematic analysis model refers to a three-step process that includes data reduction, display and drawing a conclusion (Ibrahim, 2012). These stages highlight the essential data collected, in order to help the researcher achieve the study objectives. During the stage of data reduction, the researcher focuses on reducing or discarding collected data, to the extent that only the relevant data for achieving the study objectives remain. In the current research, the data collected from secondary sources, such as books, journals and online articles were reviewed first and then relevant data were selected and organised. In Figure 5.2, the thematic analysis model and the way it works are illustrated.

The stages in the process of thematic analysis include data reduction, evaluation of the themes, data display, drawing conclusions, and interpretation. Data reduction is the first

phase of data analysis. In this stage, raw data are sharpened up so that they become more focused. Unnecessary information is discarded and the data are organised. With the data reduction method, tables and codes are assigned to the data and a conclusion is drawn. Another important step in thematic analysis is the evaluation of the themes. These themes are evaluated so that no information is discarded, if it is relevant to the research study or contributes to the completeness of the information. It is critical for the success of the research to validate the themes, as this adds accuracy and reliability to the research.

5.6.1 Themes Derived from the Literature Review

As part of thematic analysis, themes may be drawn the existing literature as secondary data and it is these which help the researcher build and design the research instruments (Crawford, 2008). In this research, the author developed the interview questions in this way and then the primary data served to identify the research themes (see Figure 5.3).

Thematic analysis was applied by the researcher in the current study, as it helped to increase the scope of the study and incorporated an analysis of descriptive types of data. In thematic analysis, the researcher collects a large amount of data and strives to widen the scope of the study. Several themes are developed in accordance with the study objectives; for instance, the general themes: senior management, organisational attitudes, change management, integration and connectivity, which in turn help the researcher achieve the objectives of the study. With this analytical technique, the researcher also converts raw data into meaningful information, but applies a compare and contrast technique for the discussion (Braun and Clarke, 2013).

As mentioned above, the researcher developed several themes from the Literature Review in relation to the research aims and objectives (see Chapter Four, sections 4.4-4.7). In addition, these themes were relevant to the research question, thus helping the researcher to answer it. Thematic analysis is used for large-scale qualitative research. This thesis, a descriptive research design was adopted by the researcher, because it is appropriate for a qualitative study. Here, the recorded data were transcribed, before being reduced in the coding process (Bazeley and Jackson, 2013).

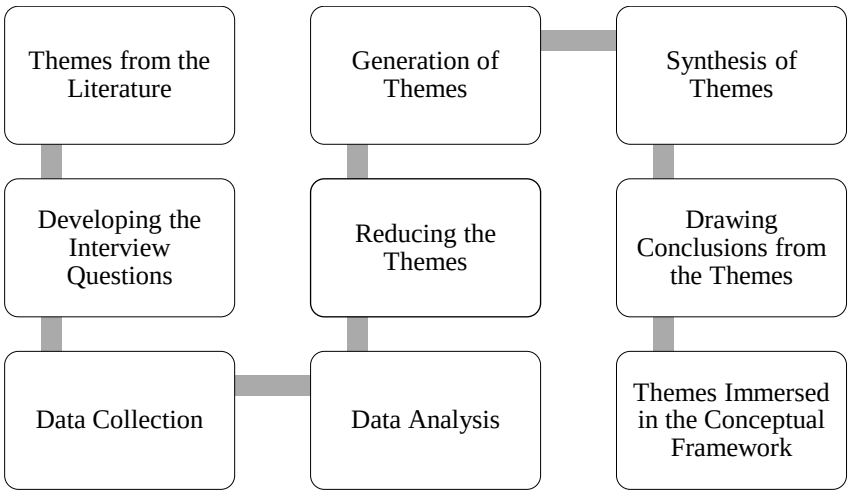

Figure 5.3: Flowchart of the research procedures

5.6.2 Thematic Data Reduction

The discussion of the data is the first stage of data analysis and includes procedures for synthesising the data. Data reduction is a form of analysis that sharpens data, so that appropriate results can be drawn. It includes methods of coding, so that the data can be collected. Moreover, the information provided by the participants can be comprehended and analysed. Furthermore, in this procedure, the relevant information is extracted, while useless or irrelevant information is rejected. Thus, it is the most critical stage of data analysis, as the accidental rejection of important information will have a critical impact on the credibility of the research (Flick, 2013).

Table 5.4: An example of the interviewees' responses

Interviews with senior IT managers in four Saudi Ministries
R: *Do you have an e-government system?*
PE1: *Yes, we do…*
R: *Can you please explain?*
PE1: *The Ministry of the Interior enhances and supports the ICT infrastructure in the development and adoption of an e-government system (e-services)…* ***M****oreover****,*** *in the* ***M****inistry****,*** *we have a portal called* ***the*** *SAUDI* ***P****ortal for all e-government systems.*

The data were coded from the participants' responses and the information was utilised to form theoretical perspectives. There are basically three phases of data reduction. In

the first phase, the collected data are tabulated and organised. They are then analysed using tables (see Table 5.5). Themes are subsequently derived and the data are arranged under these. Various methods, such as the ocular scan method can be used to analyse qualitative data. In this step, it is advised that the data are read multiple times, so that the researcher can interpret the thoughts and perceptions of the participants. In the second phase of data reduction, the researcher must identify those excerpts that specifically relate the main codes to the research aims and objectives. The third phase of data reduction involves highlighting relevant sub-coded texts (see Table 5.6).

Table 5.5: An example of coding

Answer	**Main Code**	**Sub-code**
*Yes, we do have an e-government system. The Ministry of the Interior enhances and supports the ICT infrastructure in its development and adoption of an e-government system or (e-services)… Moreover, in the Ministry, we have a portal called the SAUDI Portal for all e-government systems***.**	The ICT infrastructure	A portal

Large excerpts from texts are then broken down into small segments and themes, which are referenced with the relevant codes. Therefore, the researcher needs to analyse the whole text again and add any missing information. After this process, the data should be divided and classified with greater precision. It is important to ensure that the information obtained from the data analysis includes the information gathered that is relevant to the research questions (Flick, 2013).

5.6.3 Thematic Data Display

The second step involves displaying the data. In data analysis, data display relates to the organised display of relevant information. The researcher can display data using a variety of methods, such as narrative texts, tables, quotations and tabulation. The final step in the process of thematic analysis is the drawing of conclusions from the data. The identification of interrelated factors and variables, as well as the construction of conceptual meaning and consistency in the data then takes place in the third step (Ibrahim, 2012).

The thematic process consists of thematically analysing raw data. In thematic analysis, bulk data are required. This is particularly essential in thematic analysis, as a single statement cannot describe the information related to an event. Thematic analysis also establishes a relationship between different data originating from various peer groups. The process of thematic analysis is carried out on the research data and simultaneously develops themes. These themes are not developed beforehand, as this would reduce the viability of the data.

5.6.4 Drawing a Conclusion from the Thematic Data

The third stage in the thematic analysis model involves drawing conclusions and verifying information. In this stage, the researcher draws a final conclusion from the data previously analysed. In addition, he verifies the findings by comparing the results with the data analysed and discussed in the study. Here, thematic analysis was carried out using a thematic analysis model. In this way, the study was conducted systematically and its objectives were successfully achieved.

Table 5.6: Conclusions drawn from the data

Contexts	Descriptions	Codes	Sub-Codes
Technology	To identifies the technological factors that impact the e-government development and adoption	○ ICT Infrastructure	- Portal /(E-System) - Network Infrastructure - Application and Tools
		○ ICT strategy	- ICT Vision - ICT Planning - ICT Funding
		○ Integrations System	
Organisation	To identifies the technological factors that enhance the e-government development and adoption	○ Senior Management ○ Organisation Attitudes ○ Data Sharing	
		○ Change	- Business Process

Contexts	Descriptions	Codes	Sub-Codes
		Management	Re-Engineering (BPR) - Staff Training
Environment	To identifies the technological factors that improve the e-government development and adoption	o Policies and Rules o Cultural Environment	
Social	To identifies the technological factors that enhance the e-government development and adoption	o Lack of Awareness o Lack of Trust o Cities size o User Attitudes o Familiarity with using e-services o E-Services Availability o The realised the Beneficiaries of E-Government Services o Extend the E-Government services	

5.6.5 Reliability and Validity of the Thematic Analysis

The reliability and validity of themes refers to how their relevance to the research questions is evaluated. The reliability of the themes must be checked to see if they are representative of the whole text or of the information gathered during the research. Thematic analysis is mainly carried out on qualitative data, which is difficult to analyse. Therefore, the development of the themes and their analysis is as complex as it is essential. This is especially true of the initial and final stages of thematic analysis, in order to ensure the reliability of the research, as the themes derived in the early stages of the research must be compatible with the whole study. In other words, themes should be able to cover the information gathered in the research. This procedure also builds reliability in the research work. Finally, the validity of the themes is qualified on verifying that they relate to the research questions and research aims and objectives (Glenwick, 2016).

An independent reviewer may be employed to analyse the reliability and validity of research. An external reviewer will thereby assist the researcher in obtaining an objective viewpoint and offer suggestions. The external analysis will also identify any topics that may have been overlooked during the development of the themes. The next step should involve analysing the themes agreed upon with the outside reviewer. Suggestions from this external reviewer should be incorporated in the research study. Data must also be encoded according to the themes developed at this stage. Verification of the themes by an external reviewer will increase the analytical credibility of the research. However, if this validation takes place at a later stage, the researcher's workload will be increased, since validation during the initial stages of research prevents the inclusion of erroneous or redundant data at a later stage. Moreover, a separate analysis of the themes on the first and second levels will increase the credibility of the research (Ibrahim, 2012).

5.6.6 Step by Step Description of the Coding Process in Thematic Analysis

The steps involved in thematic analysis resemble the analytical techniques involved in qualitative methods (Braum and Clarke, 2006). The research data were gathered through 26 semi-structured interviews with two level of participants; 16 senior IT managers from Saudi government Ministries and 10 Saudi citizens. In this research, the purpose was to conduct individual interviews, seeking the most appropriate means of analysis. Therefore, as this research involves interviews, thematic analysis is cited as a suitable analytical technique (Braum and Clarke, 2006). This section describes the coding process, which is considered as an aspect of the analysis (Miles and Huberman, 1994),

This thesis carefully observes the phases of thematic analysis to conduct a thorough analysis of the data. There are six phases in total, in application of the coding guidelines. Thematic analysis consists of various methods of presenting data within a broad thematic framework. Moreover, these methods are essentially independent of such theory (Braum and Clarke).

Phase One: Familiarising Oneself with the Data

In this phase, the researcher must become familiar with the data collected. This will involve reading and re-reading the transcribed data, so that the author becomes

immersed in it. During this phase, notes may be taken to initiate the coding process that will be carried out. Once this phase is complete, the coding steps may be developed and identified with the data as a whole.

In this phase, data gathered from such television, videos or other recorded material need to be transcribed (Braum and Clarke). In the present research, data from audio files (the recorded interviews) were transcribed, as well as written interview responses and Skype interviews recorded in Arabic, the medium in which the interviews were conducted. The reason for directly transcribing data in Arabic was to avoid losing important, valuable and rich meaning. This therefore helped ensure the reliability of the analytical process.

Phase Two: Generating Initial Codes

In this phase, once familiar with the data and having made some general notes on the transcribed data, this phase presents an initial list of codes. These codes are displayed as units or elements of the themes (Boyatzis, 1998). Here, the author began this phase by highlighting and noting ideas in the transcriptions and then deriving further sub-codes to extend the main codes identified, as mentioned earlier. While generating the initial codes and sub-codes, the present author created a theory- or data-driven notes and ideas map (see Table 5.6).

Phase Three: Searching for Themes

In this phase, the data are collated and coded to provide a list of codes and sub-codes identified from the data. Moreover, the author re-focuses the data more broadly, beyond the existing codes and sub-codes, so as to merge codes into potential themes. At this stage, the author begins by considering more codes extracted from the data. Here, a mind-map or tables may be used to present codes and sub-codes. In this case, table extraction was applied to the codes derived (see Table 5.6). The purpose of this phase was to start building the relationship between the codes and the themes, as well as identifying relationships between the themes.

Phases Four: Reviewing the Themes

In this phase, the data are reviewed to merge the levels or codes and sub-codes, thus building relationships between the extracted codes. The data as a whole are then used to

generate the thematic analysis map, with the potential problem of some of the codes extracted not belonging to any themes (Braum and Clarke, 2006). Therefore, the present author reviewed the data several times to create significant relationships between levels of data, thus generating a complete data picture. Thematic analysis extraction incorporates two levels of data, consisting of codes and sub-codes, which are frequently treated in the same way, regardless of the level of the code extracted (ibid,).

Phases Five: Defining and Naming Themes

In this phase, the themes are defined and so this is where the thematic mind-map is completed, with each theme being named and ready to be processed (Braum and Clarke, 2006). Therefore, at this point, the author names the themes, so that they correspond to the relevant data describing the individual theme and identifying its purpose in relation to the research question, which lies at the core of the data. In this phase, the author is mainly focused on identifying each theme and sub-theme, as well as presenting the meaning of these themes and sub-themes. This contributes to the development of a deep understanding of each theme derived from the data. To conclude this phase, the author briefly identified, clarified and defined what had been coded, thus presenting the story of each theme.

Phase Six: Producing the Report

In this phase, the analysis and coding process is completed. The task of writing up the analysis process, which includes coding the theme identified, represents a vital step or phase. Therefore, the author paid significant attention to writing up the coding phases in the present thesis. Braum and Clarke (2006) state that writing up a thematic analysis is equivalent to presenting the complex story of the data, in order to convince the reader of the credibility of the analysis. Therefore, the author extracted the data to produce an analytical narrative, thus embedding the story and using it to explain the data.

5.7 Justification for Selecting Specific Research Methods

As discussed above, data can be collected from various sources - whether secondary or primary - and in turn, primary data collection can be sourced in different ways, such as through interviews (formal, informal or open-ended), documentary analysis,

questionnaires and observation (Saunders et al., 2009; Bryman and Bell, 2007). Employing more than one data collection method will in fact add to the robustness of any research (Yin, 2013; Johnson and Turner, 2003; Jick, 1979) and possibly better clarify specific social issues. The current research consequently employs document analysis and interviews. However, it is the interviews which serve as the major source of data in this study. The selected primary data collection methods are discussed at length in the following section, with a focus on their strengths and weaknesses (Yin, 2013).

This main aim of this research is to identify the critical factors that influence on e-government development and design a conceptual framework based on the TOE framework. Moreover, qualitative research resolves research questions through thematic analysis, which can present views, perceptions, attitudes and opinions gathered during in-depth interviews (see sections 5.5.2, 5.5.2.1, 5.5.2.2, 5.5.2.3 and 5.5.2.4). Therefore, qualitative methods are important for examining a sample interviewed about the research phenomenon of e-government development. The main research method is presented in the next section.

5.8 Selection of Data Collection Methods and Procedures

First of all, it is vital to explain the reasons for selecting a constructivist paradigm for this research method, with a qualitative approach to investigating a phenomenon in a sample of Saudi Ministries. A review of the literature produced specific selection criteria, in addition to assistance from experienced academics with hands-on knowledge of e-government development in Saudi Arabia. Each Ministry has an IT department and this thesis investigated these in interviews with senior staff and technicians at all four of the selected Ministries. There were various reasons for considering the selected case studies as representative:

- Saudi Arabia has 23 Ministries. Each of the above-mentioned case studies represents a separate sector and so these four case studies helped build a picture of the country's other Ministries.
- The Ministries' services are targeted towards the majority of the population, if not the entire population.

- These Ministries provide the most essential and fundamental services to residents: civil, financial and educational services.

The five aspects of the criteria discussed below show how these decisive factors are employed across all Ministries:

- ***Valuable data and information:*** The Ministries chosen were able to offer opinions and perspectives of E-Systems, procedures, drivers and restrictions. The employees in these organisms possessed the knowledge to contribute to an in-depth analysis of the existing situation and could present a clear picture of what things would be like in future. This was subjectively provided verbally and textually; for instance, data presented in documents. The data available from documents, presentations and reports were considered satisfactory and so the author used them, as well as data from computer laboratories and data centres.

- ***History of ICT experience***: Those Ministries that had used ICT in the past needed to be considered when studying the current research problem. The selected Ministries all had some experience of developing an e-government system. However, they were at different stages of adoption at the time of the present research.

- ***Ease of access:*** Special consideration should be given to the accessibility of the Ministries concerned. This research faced time restrictions and Ministries in Saudi Arabia do not traditionally have much tolerance for student requests. Those Ministries with fewer regulations regarding accessibility and which were prepared to provide information were therefore prioritised during selection. The author's professional network and associations also had significant influence in allowing access to the Ministries concerned, as opposed to official channels of access.

- ***Size of the Ministry:*** In terms of its surface area, Saudi Arabia is a large country and its residents are widely distributed. Government services are designed to be accessible for all citizens in every locality. This is why larger Ministries were chosen for this study, as they had branches in several locations.

It ensured that the technical and organisational issues pertinent to management were effectively evaluated, as these can turn out to be immense challenges to the development of e-government systems.

- ***Other opinions***: Several discussions were engaged in by the author, with respect to the selection of Ministries for this study. The views and suggestions of academics and practitioners were considered to be of significance in ensuring that the Ministries selected were representative. The above-mentioned experts guided the author to select Ministries experiencing varying degrees of success and failure at different phases of e-government development.

The focus in this research is to comprehend the dynamics of a particular situation (Eisenhardt, 1989). It involves contextual evaluation and the formulation of detailed description in an effort to understand a complex situation (Kohlbacher, 2006; Stake, 1995). This research therefore adopts a strategic methodology, which can assist greatly in attempting to fathom the phenomenon of e-government in its natural setting. The author presents the following arguments in support of the adoption of this strategy for the current project:

- ✓ E-government development is faced with several challenges and intricate issues. The technical, organisational and environmental factors concerning e-government are meticulously assessed in this study. This allows for more precise descriptions of the way in which these issues affect e-government development.

- ✓ The nature and context of the environment pertaining to e-government needs to be studied in detail. The impact of particular aspects of the adoption of a comprehensive e-government system from the Saudi perspective needs to be explained and so a contextual understanding is required.

- ✓ Through the corresponding research method, the researcher can go beyond the data by identifying innovative ideas, understanding relevant theories and creating relationships between patterns and the subject matter. The development of theory for e-government therefore receives substantial support.

Considering the points mentioned above, qualitative methods were employed in this study, in order to be able to make well-founded proposals for a conceptual framework. The process of e-government development in emerging countries, particularly in Saudi Arabia, should eventually find valuable and extensive guidance from this framework. In this instance, the author therefore decided to conduct case studies on two levels, so that the research purpose could be achieved. These two levels consisted of the government and public levels. The focus of this study on the government level essentially deals with the way in which Ministries construct e-government to facilitate interaction between the public sector and those seeking to access it in Saudi Arabia.

5.9 Selection of Ministries

The Council of Ministers was established by King Abd Al-Aziz bin Abdulrahman Al-Saud in 1953. It consists of the King, who is the Prime Minister, the Crown Prince, who is Deputy Prime Minister, and Cabinet Ministers. Under the bylaws announced by the Custodian of the Two Holy Mosques, King Fahd bin Abd Al-Aziz Al-Saud in September 1993, the Council is responsible for drafting and overseeing the implementation of internal, external, financial, economic, educational and defence policies, as well as the general affairs of State. The Council meets weekly and is presided over by the King or one of his deputies (Saudiembassy.net, 2015).

The first King of Saudi Arabia founded the country, establishing peace, stability and security. This was achieved in compliance with Islamic Sharia law and in so doing, the King brought an end to political turmoil, tribal conflict and the statelessness created by the absence of an authoritative central government. The sons of King Abd Al-Aziz followed in their father's footsteps and further developed the country, making it more stable and secure. They opened horizons for remarkable cultural and technological success in all fields throughout the country (Spa.gov.sa, 2015). As at 2016, KSA has 23 Ministries (see Table 5.8).

Table 5.7: List of Saudi Ministries and their website links

No.	Ministry	Website Link
1	Saudi National Portal (SAUDI)	www.saudi.gov.sa
2	The Ministry of the Interior (MOI)	www.moi.gov.sa
3	The Ministry of Foreign Affairs (MOFA)	www.mofa.gov.sa
4	The Ministry of Islamic Affairs, Call and Guidance	www.moia.gov.sa
5	The Ministry of Justice (MOJ)	www.moj.gov.sa

No.	Ministry	Website Link
6	The Ministry of Energy, Industry and Mineral Resources (MEIM)	www.meim.gov.sa
7	The Ministry of Municipal and Rural Affairs (MOMRA)	www.momra.gov.sa
8	The Ministry of the National Guard (SANG)	www.sang.gov.sa
9	The Ministry of Labour (MOL)	www.mol.gov.sa
10	The Ministry of Transport (MOT)	www.mot.gov.sa
11	The Ministry of Commerce and Investment (MCI)	www.mci.gov.sa
12	The Ministry of Education (MOE)	www.moe.gov.sa
13	The Ministry of Social Affairs (MOSA)	www.mosa.gov.sa
14	The Ministry of the Economy and Planning (MEP)	www.mep.gov.sa
15	The Ministry of Culture and Information (Info)	www.info.gov.sa
16	The Ministry of Defence (MOD)	www.moda.gov.sa
17	The Ministry of Health (MOH)	www.moh.gov.sa
18	The Ministry of Civil Service (MOCS)	www.mcs.gov.sa
19	The Ministry of Finance (MOF)	www.mof.gov.sa
21	The Minister of Environment, Water and Agriculture (MEWA)	www.moa.gov.sa
22	The Ministry of Hajj and Umrah (MHU)	www.haj.gov.sa
23	The Ministry of Communications and Information Technology (MOCIT)	www.mcit.gov.sa
24	The Ministry of Housing (Housing)	www.housing.gov.sa
25	The Ministry of the Economy and Planning	www.mep.gov.sa

Four Ministries were eventually chosen by the author, in accordance with the abovementioned criteria:

1. The Ministry of the Interior (MOI).
2. The Ministry of Education (MOH).
3. The Ministry of Municipal and Rural Affairs (MOMRA).
4. The Ministry of Health (MOH).

5.9.1 The Ministry of the Interior (MOI)

The Ministry of the Interior (MOI) bears the responsibility to serve citizens and residents, via the ABSHER Portal (see Figure 5.4), while maintaining security, stability and peace in the country. In the following sections, the formation and historical development of the MOI and its various departments is provided, as well as its journey through different phases of administrative development and organisation (Moi.gov.sa, 2015).

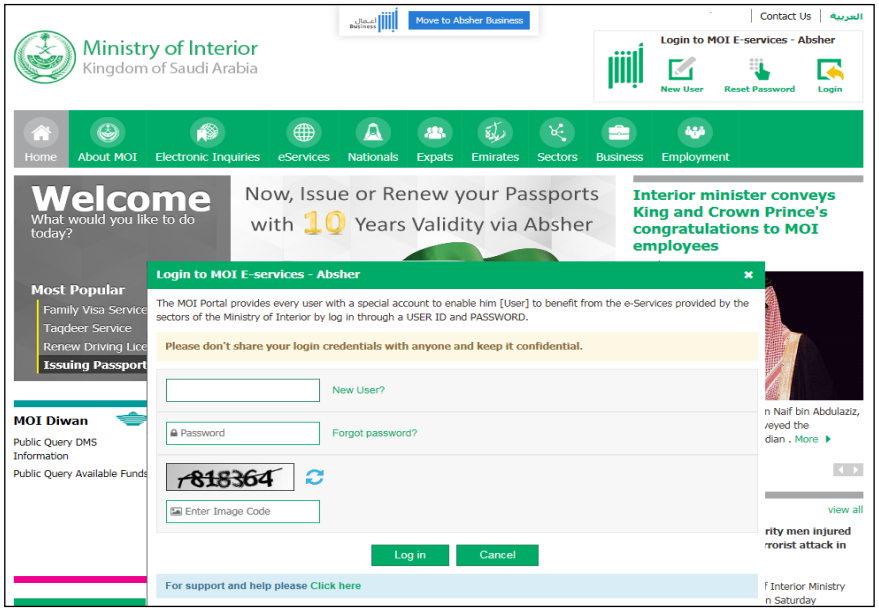

Figure 5.4: The Ministry of the Interior ABSHER Portal
(Source: www.moi.gov.sa)

5.9.2 The Ministry of Education (MOE)

In the early hours of 29 April, 2015, King Salman issued 25 Royal Orders, one of which integrated the Ministry of Higher Education with the Ministry of Education (MOE) to create a single MOE. The MOE is in turn comprised of two main sections (Alarabiya.net, 2015), one being responsible for general education and the other for higher education.

5.9.2.1 The General Education Sector

The first education system was established in Saudi Arabia in 1923 and was referred to as the Knowledge Directorate. It laid down the foundation for an education system for boys. In 1926, the first Council of Knowledge was formed by Royal Decree, establishing an education system in the Hijaz region (Al-Madina.com, 2015).

In 1953, the Ministry of Knowledge was established during the rule of King Abd Al-Aziz bin Saud. This Ministry was formed to deliver state-sector education for boys across three stages: primary, intermediate and secondary. King Fahd bin Abd Al-Aziz was the first Minister of Knowledge. In 1960, the General Presidency of Girls' Education was established during the reign of King Faisal bin Abdi Al-Aziz Al Saud (Al-Madina.com, 2015). The MOE has a portal for general education called NOOR (see Figure 5.5).

Figure 5.5: The NOOR Portal for general education – Saudi Ministry of Education *(Source: noor.moe.gov.sa/NOOR)*

5.9.2.2 The Higher Education Sector

The foundations of higher education in Saudi Arabia were laid down in 1949, when the Faculty of Sharia in Makkah was founded. Following this, the College of Teachers was established in Makkah in 1952, which later became the College of Education in 1962. Some of the other colleges established in Riyadh included the Faculty of Arabic Language (1954) and the Military College (1954). The first university in KSA was King Saud University, founded in 1957 (He.moe.gov.sa, 2015). In order to effectively administer higher education in the country, the Ministry of Higher Education was established by Royal Decree No. 1/236 in 1975. In January 29, 2015, the King then ordered the Ministry of Higher Education to be united with the MOE, making the latter responsible for implementing government policy in university-level education (He.moe.gov.sa, 2015). The Ministry of Higher Education has a portal for students studying abroad (see Figure 5.6).

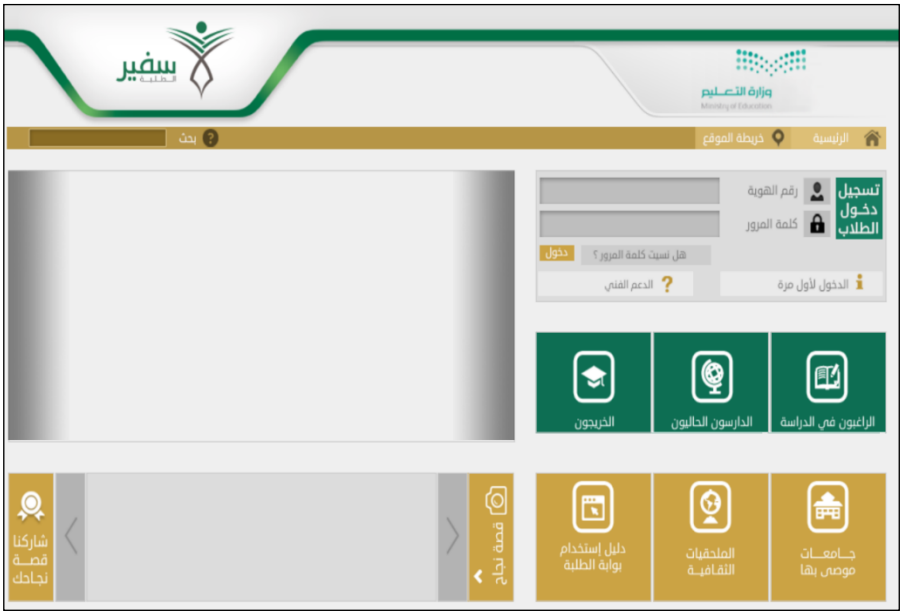

Figure 5.6: The SAFEER Higher Education Portal - Saudi Ministry of Education
(Source: safeer.moe.gov.sa)

5.9.3 The Ministry of Municipal and Rural Affairs (MOMRA)

In 1937, the MOI was established, with the aim of forming a capital secretariat to independently oversee municipalities and rural affairs. Soon, the MOI became a reference for all municipalities and in 1962, owing to the rapid and effective growth of municipal services for its citizens, Saudi Arabia's Council of Ministers permitted the development and advancement of municipal management systems. As a result, an outfit for supervising municipality affairs was attached to the MOI. This structure was delegated responsibility for supervising all municipal affairs, water interests and resource development; conducting any relevant studies and formulating plans. In 1975, the first Minister of the Ministry of Municipal and Rural Affairs (MOMRA) was appointed by Royal Order, keeping in view the requirement to develop municipal services in Saudi Arabia (Momra.gov.sa, 2015). The MOI now covers all municipality affairs across the regions (Momra.gov.sa, 2015) see Figure 5.7 for an extract from the Ministry website).

Figure 5.7: Website of the Ministry of Municipal and Rural Affairs (MOMRA) *(Source: momra.gov.sa)*

5.9.4 The Ministry of Health (MOH)

In the modern state of Saudi Arabia, as founded by King Abd Al-Aziz bin Abdul Rahman Al Saud, one of the main priorities of the government was public health and disease control. As a result of this objective, King Abd Al-Aziz ordered the establishment of a healthcare system in the country. In 1925, the Public Health Department was therefore established in Makkah. In the same year, the Public Health and Ambulance Service was formed to meet the needs of the country's health and environmental sectors. Hospitals and health centres were built across the country and strict regulations imposed to assure that practices in medicine and pharmacology were up to a satisfactory standard (Moh.gov.sa, 2015).

Moreover, the provision of healthcare services for pilgrims performing Hajj and Umrah was another matter of great interest to the Saudi government during the same period. In order to fulfil this need, the Public Health Council was established. This Council was ranked as the highest-level managerial board in the country and it assumed responsibility for all aspects of healthcare, including hospitals and healthcare centres across the country. The main objectives of this Council were: 1) To develop a skilled healthcare workforce, and 2) To control the prevalent diseases and epidemics at that time. In 1950, as per Royal Order, the MOH was established, aimed at supervising the

country's health affairs on a wider scale (Moh.gov.sa, 2015). Moreover, the MOH has a portal of its own.

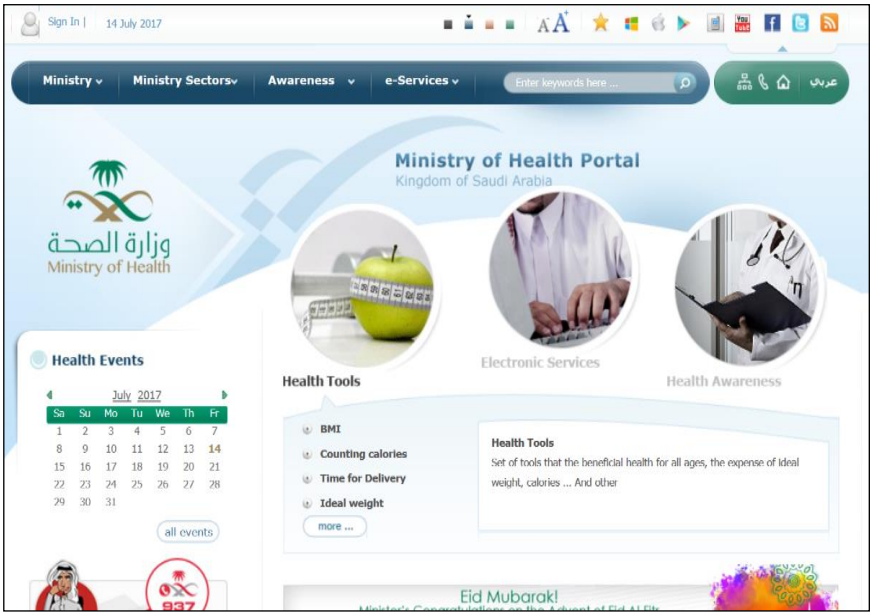

Figure 5.8: Ministry of Health (MOH) website
(Source: moh.gov.sa)

5.9.5 The E-services provided by the Four Ministries

Table 5.8: Ministry e-services

Ministries	Profile	E-Services
Ministry of the Interior (MOI)	The Ministry of the Interior (MOI) bears the responsibility to serve Saudi Arabia's citizens and residents, while helping to maintain security, stability and peace in the country. (Moi.gov.sa, 2015).	The Saudi national Portal (SAUDI)
Ministry of Education (MOE)	The government of Saudi Arabia considers its education sector to be one of the main factors of national development. The MOE is comprised of two main divisions (Alarabiya.net, 2015), general education and higher education.	SAFEER Portal for Higher Education, and NOOR portal for General Education.
The Ministry of Municipal and Rural Affairs (MOMRA)	The Ministry has been delegated responsibility for supervising all municipal affairs and resource development, conducting respective studies and formulating plans (Momra.gov.sa, 2015).	MOMRA e-services 1) Construction Licenses, 2) Environmental Health Services, and 3) Shop Licenses

Ministry of Health (MOH)	In Saudi Arabia, one of the major priorities of the government has been public health and disease control. The Public Health and Ambulance Service was formed to fulfil the needs of the country's health and environmental sectors. Hospitals and health centres were built across the country and strict regulations imposed to assure that practices in medicine and pharmacology were up to a satisfactory standard (Moh.gov.sa, 2015).	1) Vaccination Reminder e-Service, 2) Medical Licenses, 3) Hajj Health E-services, and 4) E-service Level Agreement

5.10 Ethical Approval

Ethical approval is a further essential factor to be taken into consideration when conducting any kind of research. This refers to participants being protected from any unnecessary negative consequences of the data collection process. As the university supervising the research requires ethical approval to be obtained for all research degree projects, an application for such approval was made for the present research activities using the relevant Ethical Approval Form. This was subsequently submitted to the Ethical Approval Committee of the respective De Montfort University and approved on 4th of October 2012 (See Appendix I). As a matter of high priority, the ethical concerns in this research were addressed by giving participants the Consent Form to complete and by assuring them of confidentiality and data protection.

5.11 Summary

This chapter presents the research methodology and rationale underpinning its selection for this study. In addition, the specific research methods applied were described. The fundamental objective is the identification of a suitable methodology to ensure sufficient flexibility in the data collection, as well as enabling a process of comparative analysis. This has taken into account challenges to ICT usage. The strategy employed in this research approach involves discussion and qualitative methods implemented at selected Saudi Ministries. The next chapter will now present the research findings that gathered from two levels of perspectives, IT managers in Saudi ministries and Saudi citizens. Consequently, the participant's perceptions, experiences, usage, suggestions, and their understanding will analysed and discuss in this thesis.

Chapter 6: Analysis of the Findings

6.1 Introduction to the Analysis

In the previous chapter, the research methodology, research approach and data collection methods were described and explained. As a result, a qualitative (in-depth interview) approach was appropriate for identifying the critical factors influencing the development of e-government in Saudi Arabia. Therefore, a basis was laid down in these chapters, whereby the research methodology was explained, the research philosophy justified and the strategy, research approach, methods and underpinning theory described. This was in response to the relevant gap emerging from the literature reviewed. Moreover, thematic analysis was selected as a means of answering the research question.

In this chapter, the resulting data are described and analysed. There is a description of the context and current situation, with a consideration of the emerging themes, concluding the data collection process. All the factors will analysed as ICT infrastructure (in section 6.3.1), the e-system (portal) in section 6.3.1.1, the network in section 6.3.1.2, Applications in section 6.3.1.3, ICT strategy (in section 6.3.2), ICT vision (in section 6.3.2.1), ICT planning (in section 6.3.2.2), ICT funding (in section 6.3.2.3), the integration system (in section 6.3.3), integration system (in section 6.3.3), senior management (in section 6.4.1), organisational attitudes (in section 6.4.2), data-sharing (in section 6.4.3), change management (in section 6.4.4), business process re-engineering (BPR) (in section 6.4.4.1), staff training (in section 6.4.4.2), policies and rules (in section 6.5.1), cultural environment (in section 6.5.2). lack of awareness (see section 6.6.1), lack of trust (in section 6.6.2), city size (in section 6.6.3), user attitudes (in section 6.6.4), familiarity with the use of e-services (in section 6.6.5), availability of e-services (in section 6.6.6), the actual beneficiaries of e-government services (in section 6.6.7) and the extension of e-government services (in section 6.6.8).

6.2 Critical Factors Impacting on the Development of E-Government

The next section presents an analysis of the critical factors influencing E-Government based on the TOE Framework. The data analysed were collected from Saudi government employees in senior IT management and users of e-services drawn from the general Saudi population. The findings derived are summarised in Table 6.1, subsequently discussed.

Table 6.1: Data analysis according to the TOE Framework

Factors	Key words in Manuscript	Sub-factors	Status
Technological Factors			
ICT Infrastructure	- Improve the ICT infrastructure for developing and adopting the e-government system or e-services. - The needs many further accomplishments to enhance the ICT infrastructure. - The good investment supports ICT infrastructure.		Positive influence and Required
	- E-Services are provided via a portal. - An e-government system is presented within a portal. - E-Services are provided via a webpage.	Portal /(E-System)	Required
	- Network infrastructure is needed to implement e-services and this infrastructure must be good. - A network is required to be effective and efficient for large volumes of data. - Network improvement is required to develop e-services.	Network infrastructure	Required
	- Applications need to be updated. - There is a need for improvement and updates.	Applications	Required

Factors	Key words in Manuscript	Sub-factors	Status
	- The application must be accessible.		
	- To enhance productivity, applications must be updated.		
ICT Strategy	- Requirement for vision of a successful strategy.	ICT vision	Required
	- The vision must have a clear outcome and objectives.		
	- The vision must relate to the e-government project and strategy.		
	- The vision must address the ICT strategy.		
	- Planning must take place with a formal programme (Yesser).	ICT planning	Required
	- A successful project requires planning.		
	- Plans for e-services projects or promotion must be prepared.		
	- Action plans and processes must be designed and these may be multiple.		
	- The funding for ICT project strategies follows a protocol.	ICT funding	
	- There is a lack of monitoring for e-government project funding.		
	- Government funding supports e-government projects.		
	- Funding follows the vision and planning objectives.		
	- Once funding has been agreed, there needs to be continued commitment.		
Integrated Systems	- The e-systems must be interlinked with certain Ministries to permit integration.		Positive influence
	- The e-government system is integrated into all departments.		
	- There are several links between Ministries and local authorities via a portal.		
	- There is a lack of integration of the system in other Ministries.		
	- An integrated e-system is necessary and brings benefits.		

Factors	Key words in Manuscript	Sub-factors	Status
Organisational Factors			
Senior Management	- Senior management positions need to be occupied by qualified managers from the younger generations. - Young senior managers must be supported. - Senior management play a vital role in developing e-government systems. - Traditional procedures are implemented using new technologies amongst some members of senior management.		Impeding
Organisational Attitudes	- Organisational attitudes are observed during the decision process. - Attitudes of senior managers are observed. - Managers are open-minded about the adoption of new technologies. - A prolonged process hinders new projects undertaken, due to organisational attitudes. - There is a need for change in organisational attitudes, in order to be able to develop performance. - Attitudes are considered as resistant to change.		Impeding
Data-sharing	- Data-sharing with other Ministries and departments is important. - There is an e-system for data-sharing. - Data-sharing follows a very restricted rule for reliability. - Data-sharing can have both advantages and disadvantages.		Required
Change Management	- Change management is followed by BPR. - The development and establishment of e-government services must be in the right direction.	Business process re-engineering (BPR)	Positive influence

Factors	Key words in Manuscript	Sub-factors	Status
	- BPR can benefit management performance. - BPR is necessary for e-government development. - BPR and change management are positive influences.		
	- A plan must be developed for staff training. - Motivation is required in a training programme. - Only a limited number of training courses are available. - Training courses must be available for all employees. - There a need for training courses.	Staff training	Positive influence
Environmental Factors			
Policies and Rules	- Policies and rules play a significant role in supporting the adoption of an e-government system. - Policies and rules support e-government adoption. - Administrative procedures must take place according to policies and procedures. - A new e-government system launched under Ministry policy transfers from a manual to an electronic system implemented under a policy.		
The Cultural Environment	- Culture plays a vital role in the adoption and development of e-government systems. - A change in regime can lead to a different culture, thus impacting on the development of e-government. - E-government development and adoption is considered in the light of cultural influences. - Some cultural differences can cause obstacles impeding the adoption and development of e-government.		Impeding

Factors	Key words in Manuscript	Sub-factors	Status
Social Factors			
Lack of Awareness	- A lack of awareness of e-government is a challenge that needs to be overcome. - Awareness needs to be increased. - Difficulties with e-services can confuse the user. - Awareness helps to improve time-efficiency. - Awareness is important for the development of e-government services. - There is a need for knowledge of new technologies. - Various methods can be used to raise awareness among potential users.		Impeding
Lack of Trust	- Trust is a major consideration when an e-government system is being developed or adopted. - The older generation to tend to trust e-services less than the younger generation do. - There is a low level of trust in e-services among Saudis. - In the context being studied, there is more trust in face-to-face interaction than in using technologies. - The government must build up a strong relationship between users and e-government to try and address the lack of trust. - A lack of trust negatively influences the adoption and development of e-government. - The lack of trust can be addressed by providing workshops, conferences and hiring media companies.		Impeding
City Size	- Smaller cities have fewer facilities than larger cities for e-government. - The available ICT infrastructure for providing e-services tends to be at centralised		Impeding

Factors	Key words in Manuscript	Sub-factors	Status
	headquarters, rather than local authorities. - The local authorities in big cities receive high volumes of e-transactions, compared to those in small cities.		
User Attitudes	- Users reject new technologies for personal reasons. - When adopting and developing e-government projects, users' attitudes must be considered.		Impeding
Familiarity with E-Service Use	- There is familiarity with e-government services - There is familiarity with e-services, which helps e-government adoption. - Some users are faced with issues about knowing how to use the online services. - Old people face the problem of being unfamiliar with the e-services. - Users seek to familiarise themselves with using the e-services.		Required
Availability of E-Services	- The availability of e-services is important for adopting e-government. - There is a lack of e-services in some Ministries. - E-services need to be provided in all cities, whether small or large. - There is a lack of e-service availability for women's transactions.		Required
The actual beneficiaries of e-government services	- Users affirm that e-government yields benefits for them and this has a positive influence on e-government development and adoption. - E-Government services make life easier. - Those who claim to benefit state that all transactions should be electronic.		Positive influence
Extending e-government services	- There is a need to extend e-government services. - Some government bodies are still in the process of creating e-services.		Required

Factors	Key words in Manuscript	Sub-factors	Status
	- With high demand for e-services, the government has made huge improvements in their provision. - With large land surface areas and rapidly growing populations, there is high demand for e-services - More information should be provided about e-government on government websites.		

6.3 The Technological Context of E-Government Development

Critical factors of the technological context in the four Ministries mentioned above are discussed in this section, including elements associated with the current context of Saudi e-government processes existing ICT infrastructure, ICT strategies, and system of integration and connectivity already in operation. Also described are the nature of current data in circulation and modalities of information-processing that are already in use. As per the review of the literature for this study, it is essential to identify and explain these aspects when reviewing e-government systems from the point of view of participants' responses. In this case, the responses are drawn from a sample of Saudi Ministry employees.

Table 6.2: Frequency with which each code was applied in the technology context

Codes	Sub-codes	Respondents
ICT infrastructure		15 out of 16
	Portal /E-System	13 out of 16
	Network infrastructure	14 out of 16
	Application and tools	12 out of 16
ICT strategy		14 out of 16
	ICT vision	14 out of 16
	ICT planning	16 out of 16
	ICT funding	16 out of 16
Integration system		16 out of 16

6.3.1 ICT Infrastructure

The availability of an ICT infrastructure is a key factor in evaluating an e-government system within Saudi Ministries. This would encompass factors associated with hardware, software, connectivity and database management, amongst other things. For example, participant PE1 stated:

> *The Ministry of the Interior enhances and supports the ICT infrastructure for developing and adopting the e-government system or e-services…*

Moreover, the interviewees agreed that ICT infrastructure is a positive influence on the development of an e-government system. For example, participant PE9 explained:

> *…in the Saudi Arabian context, the ICT infrastructure needs a lot of work and ICT investment, [but it] also still needs many [further] accomplishments to enhance the ICT infrastructure…*

In other words, if the deficiencies are thus identified, they can be resolved. As a testament to the scope of the initiative already undertaken in this regard, Saudi Arabia's ICT sector has shown itself to have one of the fastest growing ICT infrastructures in the world, with the country's ICT sector being listed as the most dynamic in global terms.

Participant PE13 clarified this point as follows:

> *…the investment in ICT projects will support the e-government system [and] due [to] this support and huge communication, it will prosper the ICT infrastructure and e-service adoption…*

The interview findings are summarised here, revealing the perception that ICT infrastructure is a crucial sub-factor out of the following three: the existence of an e-government system, network infrastructure, and network application. The participants stated that these are the three sub-factors with the most impact on the development of e-government systems in Saudi Arabia. The availability of an ICT infrastructure therefore forms the foundation of successful e-government development, giving rise to each of its technical sub-factors and contributing to the system set-up, since this will ensure and form the basis for sustainable e-government.

6.3.1.1 Portal (E-System)

Existing e-government systems in Saudi Arabia's Ministries would ideally form the foundation on which an overall e-government system was subsequently developed and implemented. Thus, it is important that the systems in place are all seamlessly compatible with each other, in order to ensure overall success and continuity in the adoption of e-government.

According to some senior information technology managers in Saudi Ministries, existing portals within the IT infrastructure do provide a range of services, but this seems to be at huge financial expense. Therefore, it is important for systems to be sustainable and cost-effective. Saudi Arabia's e-government systems are currently managed by the Ministry's National Information Centre. One example is what the MOI call the SAUDI Portal (see Chapter Two, section 2.6.3). On this point, participant PE4 elaborated:

> *…Yes, we have an electronic government system, SAUDI, and it is operated and managed by the National Information Centre of the Ministry of the Interior and it does provide a range of e-services…*

At the MOE, in both the general and higher education sections, there is already an e-government system. These consist of the general education section, called the NOOR (see chapter five section 5.9.2) Portal and the higher education section, called the SAFEER Portal. These were established because it was believed that the existing general e-government system for education was unsatisfactory, whereas the MOE is constantly seeking to improve its e-service performance. An employee at the MOE's IT department, participant PE5 stated:

> *…of course we do have e-government in [the] general education section, it is called NOOR; it's very important that you provide e-services to enhance the communication between schools, parents, teachers and the Ministry...*

Participant PE7 declared:

> *[T]he higher education section has [an] e-government system called the SAFEER portal and it provides significant e-services, such as the Saudi Arabia Cultural Bureaus (SACB) around the world…*

Other Ministries in Saudi Arabia may not have a portal, but they still have e-systems providing e-services via webpages containing online forms, online requests and facilities for making e-appointments. For example, participant PE14) explained:

> *…there are e-services via the Ministry webpages and the Ministry provides online services, [such as] online applications and online requests…*

Overall, this sub-factor (the system portals) emerged from interviews with employees at Saudi Ministries, whereby it was concluded there are existing e-government systems, which cater for the public and private sectors. These are already in operation, but there is now a need to develop and improve on such 'e-systems' in the Saudi context. This is aside from the need to integrate all government Ministries, departments, businesses and public entities into a single system. Moreover, e-government functions must be improved so that they are more appropriate for employees, as current e-government is inadequate for ensuring efficiency in its operation. There is the problem of integrating different departments with each other, in order to develop an operating system via a single window, so that the entire process can be completed by those operating it.

6.3.1.2 The Network Infrastructure

Networks are a core factor enabling the adoption of e-government and Saudi Ministries currently function within networks. Each has a specific degree of connectivity and infrastructure. However, while a few of the systems are on a par with established standards, many lag behind in terms of network infrastructure, layout and design. The majority of existing systems are in fact very basic in their structure and this in turn affects their functionality.

The study participants stated that heads of department at their Ministries seemed to have uniformly acknowledged that ensuring their systems are up-to-date is a challenge, despite the fact each Saudi Ministry already has its own network infrastructure. Moreover, existing network standards are insufficient for performing the work easily and efficiently. Some departments lack an adequate network to perform their functions efficiently, while others are better placed to do so, because they have a suitable network. Nevertheless, there is a need to maintain a high-level of performance and networked services in all departments, so that e-government can work effectively. For example, participant PE5 declared:

> *…the Ministry maintains a good network infrastructure at the head offices, which cannot be as good as the other branches and schools too…*

In addition, participant PE7 clarified:

> *…the situation in the context of the need for an effective and efficient ICT network being a prerequisite…*

All activities can be coordinated with the assistance of an efficient ICT network, where all relevant offices in a country are properly linked. Furthermore, premium technical aids and firewalls for minimising error are necessary to ensure correct functioning through an ICT network infrastructure. In the case of Saudi Arabia, it was clarified there are strong networks, which can efficiently link headquarters with branches over long distances, but there is also a need for strong and secure performance, so that all functions can be correctly performed. In other words, improvements must be made so that the ICT network can be optimally maintained in the Ministries. For example, participant PE8 explained:

[T]he network is important… This is even more necessary in consideration of the huge volume of data processed in the Ministry [which] has a huge ICT network to handle the data passing through all departments.

An efficient ICT network is consequently essential for undertaking e-government projects. However, the current e-government system is insufficient for carrying out all government work and so e-services require development via an enhanced network infrastructure. For example, participant PE14 clarified:

…if the Ministry needs to develop its e-services, it should improve the network infrastructure…

In conclusion, the modalities of improving and developing service standards and operations are discussed and explained, since it is important to have a fair exchange of information in this regard, thus contributing to the overall efficiency and effectiveness of network adoption.

6.3.1.3 Applications

Applications and technology tools are other vital factors for developing and adopting a system of e-government and so it is crucial to correctly identify and select the appropriate ICT infrastructure for maximum effectiveness and efficiency. As a result, the Saudi Arabian government should be given credit for doing what is necessary to ensure that various government and public sector departments have access to a single system and common resources, including a full range of computers, routers, servers, networks and printers. These will permit the development and implementation of e-government protocols in their entirety. The participants explained the importance of updating applications to develop e-government. For example, participant PE11declared:

…It is so important that all technology is adopted in the Ministry.

Participant PE12 added:

…also, this kind of application always needs updating…

Furthermore, the participants confirmed that the process of development should be improved through applications which could raise the level of e-service quality, while also enhancing efficiency and productivity. For example, participant PE14 clarified:

[T]he applications and tools need huge improvement to provide quality e-services… from my perspective… the Ministry's staff should have access to the required ICT facilities…

In addition, participant PE15 expressed the opinion:

…to ensure [the enhancement] of productivity and efficiency of the entire Ministry, it should update its applications…

Overall, from the data conducted at the abovementioned Saudi Ministries in relation to application and tools, it became clear that applications and technology are important in this context. They are already present in the technology, but need to be developed and improved, in order to attain progressive and high quality performance.

6.3.2 ICT Strategy

In order to ensure the efficiency and effectiveness of an e-government system, the adoption of an ICT strategy is a basic and fundamental requirement. For example, participant PE1 stated:

[T]he current ICT strategy is more than the current requirements, and provides the necessary vision to implement a successful strategy…

Moreover, an ICT strategy should be based on two key factors, namely vision and planning. For example, participant PE9 confirmed:

… [This] has to be with [a] strategy, planning and vision.

To facilitate this, the corresponding tools and associated infrastructure should be adopted, thus ensuring the effectiveness of the selected ICT system. The Saudi government's efforts in providing this in various ways should be acknowledged here. For example, participant PE15 explained:

[T]he e-government projects are long-term projects; it is necessary for the senior management [to] have a strategy... there is a lack of knowledge on the part of the senior management [which] hinders the e-government system from improving.

Ministries have the necessary resources and there is every indication that they intend to actively pursue this course of action. However, it is important that the development and implementation of an e-government system takes place in a systematic manner, bearing in mind what is appropriate to ensure continued improvement in the e-services provided.

However, the interviewees stated that the efficiency of the system is clearly observable for all decision-makers.

6.3.2.1 ICT Vision

There was virtually a consensus amongst the interviewees, as regards the need for a clear ICT strategy, since it is imperative that the Saudi government maintains clear strategic objectives for improving current e-government. In this respect, it is important to decide beforehand on the parameters of the e-services to be provided. For this, an appropriate roadmap is required, detailing the e-government system to be adopted. Moreover, development needs to be agreed upon by all Ministries and decision-makers involved. For example, participant PE2 emphasised the importance of considering:

> *…the current requirements and [providing] the necessary vision to implement a successful strategy…*

The interviewees insisted that the current situation accounted for all aspects of the technology required to pursue this vision. For example, participant PE3 mentioned:

> *[T]he requirement for a clear vision in this regard…*

Moreover, one IT manager, participant PE4 added:

> *[T]he Ministry has a clear vision with regard to helping to implement ICT and of course [the] e-government project…*

In addition, given that there is so much to be done in preparation for such e-government, a big vision will help shape the steps taken along the path of development. For instance, participant PE16 stated:

> *[In] the vision for ICT strategy, the Saudi government has addressed many of the keys to success… of course we need to improve it… if there is no vision, it will not be successful for any strategies or projects…*

Similarly, participant PE7 ventured:

> *…there was a need and scope for further improvement and work on the existing ICT strategy in this regard, with an official explaining how a clear vision… contribute[s] to efficiency in developing and implementing an e-government system…*

Moreover, participant PE11 clarified:

…the vision is important to develop ICT projects…

Some of the respondents were positive about the current ICT network infrastructure, because of its efficiency when undertaking the assigned work. However, some of the respondents were not so positive, because certain departments were unhappy with the current performance of their ICT network infrastructure. This would indicate a lack of overall efficiency and capability in the development of e-government infrastructure within the country. From the information gathered from the interviews in this research, it may therefore be concluded that current ICT strategy seemingly lacks the required vision for both long- and short-term projects.

6.3.2.2 ICT Planning

ICT and e-government projects are planned by the Ministry of Communication and Information Technology (MCIT). This Ministry is responsible for the entire e-government project (Yesser) in Saudi Arabia (See Chapter Two section 2.5.1). The Saudi government has aligned its various Ministries with the objective of promoting an e-government set-up (Yesser) and establishing e-government facilities in Saudi Arabia - the latter being the long-term strategic objective. This has been the process of development for the past 20 years. For example, participant PE9 stated:

> *…the MCIT established an e-government programme called Yesser, which is how all e-government projects are planned…*

Yesser has two action plans for e-government projects. Every five years, a 'New Term Strategy' is designed, which launches new approaches. The interviewees alluded to Yesser, stating that this had significantly contributed to progress so far (Yesser.gov.sa, 2015). For example, participant PE10 explained:

> *…in order to execute successful projects or adopt new technologies, the Ministry prepares and designs a plan, and as a follow-up step, the Ministry presents this plan to the [Yesser] programme for evaluation and adoption.*

Saudi Arabia has in fact actively and proactively adopted ICT processes, with a view to building an efficient and effective ICT infrastructure. This runs parallel to developing a digital economy, which has facilitated the progress and prosperity of its citizens and expatriates in Saudi Arabia. In this regard, the Saudi government is credited with proactively taking the required steps to ensure such facilities are available for its citizens

and businesses operating in the country. It has in fact successfully launched a range of initiatives in this regard, experiencing success in downstream e-services (Yesser.gov.sa, 2015). For example, participant PE13 stated that:

> *…one of the initial steps for any of the projects or to promote the system is to prepare for such a plan, so that it is successful…*

The interviewees cited MCIT as being responsible for the planning of e-government and ICT projects, as in the e-Government First Action Plan (2006-2010) and the e-Government Second Action Plan (2012-2016). For example, participant PE14 added:

> *…also, the MCIT has implemented two action plans, a first and second action plan for the e-government programme (Yesser)…*

The interviewees concluded that MCIT in Saudi Arabia had initiated a sound process for national planning, such as ICT or e-government projects. Moreover, a successful outcome was achievable, except where insurmountable challenges or obstacles arose. Planning is an important factor in the process of developing an e-government system.

6.3.2.3 ICT Funding

Funding was identified as a significant influence on the development of e-government systems, the interviewees explained how the e-government projects at their Ministries were funded. Furthermore, the need for financial investment in the development of e-government system projects was highlighted. For example, participant PE9 declared:

> *…the funding for any new ICT projects needs to follow an administrative process at the Ministry of Finance and Ministry of Communication and Information Technology [then] get approval…*

Funding is an important element of ICT strategy. Therefore, it may be seen as a necessary part of e-government development. The interviewees agreed that e-government system projects do actually receive funding, but there is an absence of monitoring from the Ministries funding them. For example, participant PE1 claimed that:

> *There is funding for e-government projects, but this funding lacks monitoring…*

The participants asserted that there was substantial financial investment, as is required, with no limit to the expenses allocated for funding e-government projects (there is an open budget). Therefore, the Ministry can fund an e-government project, but it requires a proper strategy, planning and vision behind it, if this is to be successfully accomplished. For example, participant PE9 explained:

> *The cost is not limited to funding e-government projects; the government spends a lot of money and is able to fund any e-government project...*

Moreover, participant PE9 added:

> *…any funding process has to be with such vision and an action plan to be able to meet the project's objectives…*

Moreover, e-government development is not an easy task; it takes a long time to obtain funding for an effective project. For example, participant PE15 claimed:

> *[An] e-government system takes a long time… [it is a] project that needs full focus, commitment and continuity to achieve the development of [an] e-government system…*

Ultimately, the research findings give some idea of the budget for e-government in Saudi Arabia. Furthermore, they reveal that e-government officials have already been involved in change management, re-engineering, consultation, business analysis, ICT strategy and the setting up of ICT infrastructure.

6.3.3 Integration Systems

Integration is important factor of an e-government system and they are closely associated with the synchronisation of multiple back-office applications, including databases, user interfaces and so on. From this point of view, integration can either be vertical or horizontal. To summarise, horizontal integration refers to the joining of facilities across multiple functional areas, applications and databases, which in turn contribute to integrated government services and ensure the seamless flow of information for citizens and other system users. In the context of Saudi Arabia, this would include the flow of information between multiple e-government portals, government departments, the SADDAD payment system, etc. For example, the interviewees were willing to explain the multiple processes through which their networks were all synchronised with e-government in general. Therefore, some Saudi

Ministries do appear to have a system that integrates them, while others do not. To illustrate this, participant PE1 stated:

> *…in the Ministry, the processes and systems are structurally and electronically interlinked within several government bodies… such as the SAUDI Portal and SADDAD…*

Moreover, participant PE3 explained:

> *…departments are interlinked with the official e-government portal (SAUDI)…*

In addition, with reference to an example of an integration system, participant PE8 mentioned that:

> *[T]he Ministry has [a] very strong system to link [it with] its branches… we [have] linked our system through a system called (the SAFEER portal) and an interior system called (the SAFEER work).*

On the other hand, some Saudi Ministries suffer due to the absence of a connecting system (an integration system), or else only meet the communication requirements associated with other government Ministry organisations to a limited extent. Therefore, this is a very important factor that may or may not hinder the process of developing Saudi Arabia's e-government system. For example, participant PE5 stated that:

> *[T]he Ministry is not interlinked with centralised e-government (the SAUDI Portal)… if the system [is] in [the] same location, the connectivity works smoothly. However, if the location is different [it] is not [a] connected system.*

Moreover, participant PE16 declared:

> *…we are limited with regard to other Ministries…*

The interviewees agreed on the importance of an integration system for establishing e-government. It is in fact a vital factor. For example, participant PE16 referred to:

> *"[T]he importance of an integration system and what benefits can be gained from it.*

In conclusion, the interviewees identified the importance of a system of integration and connectivity to address the problems and influences affecting e-government development. Some Saudi Ministries are significantly more effective in implementing e-

government, due to the way in which their multiple applications function and their integrated networking infrastructure, whereas other Ministries lack such facilities for developing an efficiently networked system.

6.4 Organisational Context of E-Government Development

This section explains several aspects related to multiple organisational contexts that have been identified as important factors of e-government development, including senior management, organisational attitudes and change management. The majority of the respondents agreed that the organisational factors was a key aspect, significantly contributing to the potential success of Saudi's overall e-government system. The interview respondents gave their views on various aspects that could either promote or adversely affect e-government initiatives.

Table 6.3: Frequency with which each code was applied with respect to the organisational context

Codes	Sub-codes	Respondents
Senior management		16 out of 16
Organisational attitudes		14 out of 16
Data-sharing		13 out of 16
Change management		14 out of 16
	Business process re-engineering (BPR)	12 out of 16
	Staff training	16 out of 16

6.4.1 Senior Management

The participants agreed that the attitudes of decision-makers play a crucial role in determining the success of e-government initiatives in Saudi Arabia. This is especially true in view of the hierarchical mind-set in Saudi's government Ministries, whereby decisions made in the senior management tier have effects which gradually trickled down to subordinate staff. In other words, decisions made at higher levels of management in Saudi's government Ministries will have a huge impact on lower level management and on anything which is ultimately implemented. This is also true of e-government. Most of the interviewees indicated difficulties involving senior

management, especially where the older generation is concerned. For example, participant PE4 explained:

> *We need [a] new generation of senior management with [a] high level of qualification… they need to improve their performance.*

Participant PE5 was also positive about the potential impact of younger members of senior management:

> *…younger [members of] senior management support the adoption of new technology…*

On the other hand, some of the interviewees put forward different perspectives, demonstrating that age does not always matter in this regard. However, it is a common characteristic of senior management that they are less likely to support new technologies. For example, participant PE8 added:

> *…there are some senior management members [who] support the idea of changing to new technology or developing the quality of performance and some senior management members like to maintain traditional procedure.*

From the point of view of efficiency, all the interviewees agreed that senior management play an important, even vital role in e-government development. For example, participant PE11 stated:

> *…the senior management play a vital role with regard to e-government system development…*

Participant PE14 added:

> *[T]he senior management is supportive of new technology and launching [an] e-government system can only bear fruit if the senior management [is] also aligned with the decision.*

The interviewees therefore highlighted several factors, one being the age of senior management. They were in agreement that senior management play an important role in e-government development and constitute one of the key factors of influence.

6.4.2 Organisational Attitudes

The interviewees were almost unanimous in their perceptions of how organisational culture contributes to successful e-government development. In changing the attitudes

of ‘old school’ management, with its traditions and procedures, as well as those of individuals staffing the workplaces involved, a significant influence can be exerted over the ways in which change is brought about in the public sector nationwide. Organisational culture involves personal attitudes and culture in this regard. For example, participant PE9 was unequivocal:

> *…during meetings and discussions on deciding on the strategies to adopt and to initiate changes in a certain area, it is often observed that some individuals [are influenced] by their attitudes…*

The participants agreed on the need for open-mindedness in organisational attitudes, if quality is to be developed in performance. This can be seen from participant PE6, who concluded:

> *We need open-mindedness in senior organisational administration…*

In addition to organisational attitudes, the long process of developing new technologies or ICT projects sometimes faces obstacles, as can be seen from a statement made by participant PE12:

> *…the problem with a new strategy or plan for a new project… is time [being wasted] through a long process…*

The participants observed how difficult it was to implement change, since there was a general reluctance to step outside the comfort zone in implementing new processes. However, it is not possible to either improve a system or initiate new processes without bringing in change and part of this involves addressing prevailing organisational attitudes. For example, participant PE14 stated:

> *[T]here are some departments [which are] not following the changes in their system…*

Moreover, participant PE15 stated:

> *We need significant change in organisational attitudes to be able to change and develop performance…*

Consequently, the importance of organisational attitudes for such e-government development involves significant positive or negative impact, which can either promote or hinder the development process, as participant PE9 declared:

The adoption of e-government is of huge importance and we cannot do this with resistance to change.

Finally, what can be seen overall is that organisational attitudes are a vital factor that impacts on e-government development. Moreover, the development process needs to be nurtured by appropriate and beneficial organisational attitudes.

6.4.3 Data-sharing between Government Organisations

Considering the size and scope of the Saudi government, it is only to be expected that there will be certain challenges involved in the development of e-government. IT professionals are particularly cognisant of the fact that without an efficient system for handling and processing the vast volume of data and information generated, the benefits of e-government will never materialise. Nevertheless, the participants were aware about the challenges of efficiently transmitting and distributing huge volumes of data and information. In this regard, the Ministry utilises electronic aids and systems, although a significant amount of information is still processed manually; something which is currently being rectified. For example, participant PE1 explained:

It is not easy to share data, but departments in the Ministry use an electronic system, so we can share data between departments or Ministries.

Moreover, participant PE3 added:

[O]ur department uses [an] electronic system, but [for] some procedures, we still use paperwork.

Given the many challenges and issues involved in efficiently moving and transmitting data and information, there is the ever-present risk of this information being compromised. Therefore, even though it is important that the Ministry receives and provides input and information, moving it between organisations and individuals, the integrity of these data needs to be maintained via an electronic process. Currently, the Ministry utilises the SAFEER Portal for data-sharing purposes within the Ministry. Participant PE5 mentioned:

…the data inside the Ministry has accessibility and reliability in its data-sharing.

In addition, participant PE6 declared:

...the concept of data-sharing out of the Ministry is a good idea, but has to be with a rule… also, we do have a sharing system inside the higher education section, called the SAFEER portal…

The Ministry of Health has different principles associated with data-sharing, in that it cannot share patients' medical records with other Saudi Ministries. For example, participant PE15 declared:

… we have a strong policy on sharing information (patients' rights)…

Overall, it was revealed that there are several departments, which have yet to use an electronic system for sharing data and information with other departments. Therefore, government officials have conceded that there is a need for major upgrades to their systems, so that the same tasks can be carried out more efficiently and reliably. Moreover, information-sharing may be considered as a key factor, although it is perceived differently in each of the Saudi Ministries explored in this study. In some Ministries, it is strongly believed that procedures for data-sharing need to be established and enhanced and so this idea needs to be supported.

6.4.4 Change Management

In Saudi Arabia, change management is generally related to the adoption of e-government, or similar new systems replacing existing traditional procedures. Change management is a significant factor in helping IT staff to support change and upgrade traditional procedures.

The interviewees mostly agreed that change management plays a vital role in the success of e-government development in Saudi's Ministries. Moreover, they expressed the belief that there was a need to modify and adapt traditional procedures, thus improving existing e-government with amendments to the way in which it is managed. This is because management would enhance processes and services through the incorporation of e-government. For example, participant PE4 stated:

…decision-makers should plan change management in such a way that they can replace [the] old e-government system with a better and improved one…

Moreover, it is changes in management itself that would help advance and establish a more efficient e-government system. For example, participant PE6 added:

> *…change management should be part of their advancement in order to establish a better e-government system…*

As mentioned briefly above, the effective implementation of new management practices was also recommended, aimed at the overall development of e-government in KSA. Change management is not an easy task, but rather demands a systematic and considered approach, requiring the support of government authority at a high level. Moreover, participant PE15 stated:

> *…to develop proper e-government services, we have to ensure that strategic change management [is] fully implemented… so that we can make sure that e-services are going in [the] right direction…*

Overall, the participants explained that change management is a vital factor influencing the development of e-government systems in the Saudi context. Therefore, the Saudi government must concede that change management is necessary.

6.4.4.1 Business Process Re-engineering (BPR)

One of the big challenges for senior management is how to modify management approaches, because this implies a great deal of work and a high level of complexity. The interviewees agreed that BPR could help reduce the operating costs of e-government, thus eventually maximising efficiency and taking performance to the next level. Moreover, it would help improve performance quality. For example, participant PE6 declared:

> *[T]he benefits of [the] re-engineering process is [its] influence on [a] daily basis, such as improving performance, increasing productivity and saving the budget…*

Moreover, participant PE9 indicated the:

> *…need [for] change to be more oriented towards BPR in terms of e-government system development… BPR [is] one of the needs [for] change in the Ministry.*

In addition, participant PE3 added:

> *…BPR is the best option when it comes to the advancement of [an] e-government system in [the] Saudi context…*

The participant agreed that an optimal approach to management reform was necessary, because whenever a work process needed to be modified, much broader change was also necessary, such as BPR. Moreover, as already stated, the advantage of BPR, conducted on a regular basis, is that it can help improve performance, cut costs and most importantly, maximise the efficiency of e-government. For example, participant PE16 confirmed:

> *…for improvement and development, [the] Ministry needs [a] high level of decision-making…*

In addition, participant PE9 stated:

> *…BPR or any change management procedure will have a positive influence on [the] e-government system and through this, it will update the e-system...*

This will in turn improve quality and advance e-service performance, but the Ministry must ensure that high-level, up-to-date re-engineering procedures are applied; working towards better e-government services, overall development and e-government implementation in the country. However, it was demonstrated in the interviews that BPR was not being implemented in the Saudi Ministries concerned and this had an influence on the e-government development experienced in the Saudi context.

6.4.4.2 Staff Training

In the light of factors influencing e-government systems, an important issue arising during the interviews was the need to educate employees about e-government systems and their uses. Training is highly necessary for employees, in order to familiarise them with these types of new system. The research findings also revealed training to be a significant factor in e-government system introduction and development, as well as for the personnel engaged in its implementation. Training is of particular importance, given the specific skills, such as technical and managerial skills, required for integrating e-government. Moreover, training in general enhances employee performance, which will in turn promote the development of such a system. For example, participant PE10 stated:

> *…in order to identify the employees' need for training, they should develop [a] plan in such a way that they can evaluate the staff needs…*

Furthermore, participant PE6 referred to the fact that,

> *…the Ministry is focusing on the development of employees' skills by motivating them and sending them to various places to attend different conferences, events and courses…*

Other interviewees expressed their concern that the training should be for all government employees, not just for those in IT. This would ensure the development of an e-government system throughout each Ministry. For example, participant PE3 revealed that:

> *…sometimes it is only for IT staff…*

Other concerns highlighted by the interviewees were that training programmes were limited in number. For example, participant PE4 emphasised that:

> *There are training programmes, but limited…*

Training would result in high quality performance and knowledge of the different interactions in terms of the technology involved. For example, participant PE5 admitted that

> *The Ministry has [a] low level of technical training [for] when there is a problem or need…*

All the interviewees clarified that for any new e-services, professional development brought about through training was an essential component. For employees, this would not only consist of hands-on practical training, but also the provision of user manuals. Furthermore, participant PE6 mentioned:

> *There is training, but for new projects…*

The participants agreed that the training needs were exclusively concentrated in the personnel potentially engaged in e-government development. Furthermore, participant PE16 referred to:

> *…the training necessary to successfully develop and implement [an] e-government system…*

As indicated above, all the interviewees identified the need for training in the use of new technologies in the context of e-government. In order to improve the performance of Saudi Ministries in their e-service provision, training should therefore be planned for

Ministry employees and it may be deduced that staff training has an influence on the development of e-government in all departments.

6.5 The Environmental Context of E-Government Development

The environmental context was mentioned with less frequency in the interviews, compared to technological, organisational and social factors. In this section, the factors influencing the work environment at Saudi's Ministries are described, including economic and cultural factors, policies and rules.

Table 6.4: Frequency with which each code was applied with respect to the environmental context

Codes	Respondents
Policies and rules	14 out of 16
Cultural environment	13 out of 16

6.5.1 Policies and Rules

System policies and rules for resolving problems are highly complex in e-government, because they are based on centralisation. As a result, they need to be restructured to make them more efficient. In Saudi Arabia, this is a very significant area for consideration, in order to boost the advancement of e-government system projects. In other words, effective policy and adapted rules can help open the door of opportunity to greater development and progress. The interviewees stated that policies and rules minimise bureaucracy, centralisation and complex authority structures.

The majority of the interviewees clarified the main priorities for e-government in the contexts involved and discussed the issue of policies and rules, because without these, Ministries cannot develop or implement e-government in the first place. Policies and rules also help promote performance quality. Furthermore, it was added that even through the government are funding such projects and currently witnessing dramatic progress, proper policies and a high level of performance quality are also required, besides funding. For example, participant PE5 responded:

> *The policy helps the adoption of e-government to raise the quality of performance…*

In addition, participant PE4 added:

> *[T]he Ministry works according to policies and rules and any projects, including e-government projects follow these policies and rules…*

Furthermore, the majority of the interviewees agreed that in order to launch new ICT projects, the respective policies and rules must be satisfactorily applied. For example, participant PE8 stated:

> *…to launch [an] e-government system to serve users and meet their satisfaction… policies and rules [must be followed]…*

Most of the interviewees stated that the Saudi government is aware of the need for policies and rules and their value for saving time and improving performance. This is due to the fact that the main purpose of policies and rules in their work is to minimise bureaucracy and avoid overly complex procedures. For example, participant PE12 described:

> *…the [value] of following rules and policies is to save time and improve performance… policies and rules are expected to reduce bureaucracy and avoid complex procedures.*

Moreover, participant PE11 added:

> *…with both] electronic services [and] normal services… there are rules, but sometimes we face several rules [that] are not helpful [for] the development of e-government.*

The interviewees agreed that e-government system procedures are highly necessary, but this need can only be met by placing an emphasis on formulating policies and rules, thus echoing the perspectives shared by personnel from other Ministries. Participant PE14 clarified:

> *…the importance of policies and rules in e-government development [is that] these policies and rules play a vital role in supporting strong procedures. They also enable [us] to solve problems and contribute knowledge related to concepts of e-government system development.*

As mentioned earlier, policies and rules are in any case very much a part of traditional ways of operating in the Saudi context. As a result, the person in charge is allocated a very high level of responsibility for handling whole procedures; including investment, spending, and the organisation of all financial activity in government agencies. It therefore becomes apparent that the way in which policies and rules are instituted needs

to be more tightly controlled, if an e-government system is to be successfully developed.

6.5.2 The Cultural Environment

The interviewees stated that one of the most significant factors influencing the development of e-government in Saudi Arabia involves cultural differences. These play an active role amongst environmental factors overall. The interviewees further elaborated on Saudi culture, which is vibrant and complex. They stated that e-government systems develop in in rich but idiosyncratic ways in that context and therefore, the cultural aspect needs to be taken into consideration. For example, participant PE3 stated:

> *…one of [the] challenges and obstacles that face the development of [an] e-government system in Saudi Arabia is the culture of Saudis…*

In addition, participant PE4 pointed out:

> *…there are some differences in Saudi culture [according to] different Saudi regions… Saudi culture is hugely different from other cultures…*

However, the cultural differences in Saudi Arabia are also linked with problems, as participant PE6 pointed out:

> *…with regard to the development of [an] e-government system, the issue of culture is [a] very important [one]… faced by the Ministry when it comes to developing new technologies, such as e-government systems…*

Meanwhile, participant PE7 emphasised:

> *…the importance of cultural differences in e-government system development… it is cultural differences which play a vital role in [the successful] development of [an] e-government system…*

In fact, the majority of the interviewees stated that with regard to e-government, cultural differences are considered crucial in the Saudi context; these pointing to problems of belief, trust, awareness and behaviour, with participant PE14 adding that:

> *…cultural differences play a significant role in [the] development of [an] e-government system…*

While, participant PE16 described how:

> *…the obstacles relate to cultural differences [and] these differences should be analysed and identified carefully, [during] the development of [an] e-government system in Saudi Arabia.*

As clarified above, the participants agreed that cultural differences in Saudi Arabia have had a profound impact on the development of e-government. As a result, these peculiarities need to carefully identified, studied and analysed, in order to be able to contribute to the successful development of an e-government system.

6.6 The Social Context of E-Government Development

The present research identifies four social factors that could impact comprehensive e-government development in the Saudi context. The social context data have conducted and gathered from two levels of participants first with the senior IT managers, from the perspective of senior IT managers how work in Saudi ministries which have identified four critical factors (Lack of awareness, Lack of trust, City size and Users' attitudes) that considered from the public sector from their experiences with transactions that involve with the public-sector. The second perspective has gathered and conducted from the Saudi user in regard of using the e-government services the second with Saudi users which have identified designed to presented the user perspective on the IT government perception of social context, moreover, the user have identified five more critical factors namely lack of familiarity with the use of e-government; availability and unavailability of e-services; failure to consider the actual beneficiaries of e-government, and need to extend e-government services. These social factors are also crucial for determining the impact of e-government in Saudi Arabia, because of its unique features. Therefore, in this case, data needed to be collected on the use of e-services, with respect to social factors. Furthermore, it was important to gather diverse opinions on the use of e-services for different purposes. Therefore, information on differences between users was provided. The impact of awareness, trust, city size and the use of e-government are an important aspect of research, because the way in which e-government is implemented and then taken up by users can be affected by such social factors.

Table 6.5: Frequency with which each code was applied with respect to the social context

Codes	**Male users**	**Female users**	**IT Mangers**
Lack of awareness	4 out of 5	3 out of 5	16 out of 16

Lack of trust	5 out of 5	4 out of 5	16 out of 16
City size	4 out of 5	3 out of 5	12 out of 16
Users' attitudes	4 out of 5	3 out of 5	14 out of 16
Familiarity with using e-services	4 out of 5	4 out of 5	
E-Service availability	4 out of 5	4 out of 5	
The actual beneficiaries of e-government services	5 out of 5	4 out of 5	
Extending e-government services	4 out of 5	4 out of 5	

6.6.1 Lack of Awareness of E-Government

The current research concludes that there is a significant issue concerning low awareness of online systems and processes, especially in relation to how e-government systems are developed and implemented globally. Therefore, in this study, it was found that public users need to be made aware of the existence of e-systems and how e-government is used, along with the potential benefits to be gained from it. For example, participant PE3 stated:

> *…lack of awareness is one of the important challenges that the Ministry faces in e-government system adoption… at [the] level of user awareness, it's difficult to convince [people] to use [a] new e-system…*

Moreover, the participants stated that users need to be made aware of the benefits associated with the new e-services and data management tools. Such awareness on the part of the user would in turn contribute to increased efficiency in terms of time and effort. For example, participant PE5 explained:

> *…awareness is helping users to save time and increase productivity. Also, public users benefit from [enhanced] e-government system performance…*

Therefore, it is clear that the interviewees generally recommended raising levels of awareness of the existence and benefits of e-government systems, in order to ensure their success. Consequently, once users are aware of the basics, they can contribute to efforts by providing their own input, highlighting any shortcomings of e-government. For example, participant PE10 declared:

> *…awareness can be improved by explaining the importance of e-government system development to public users and ensuring that they understand [its] targets…*

The participants concluded that lack of awareness could be resolved through effective media campaigns amongst users. Generally speaking, public sector e-government systems are associated with the nation's population being able to access online services to the maximum extent, which requires a certain level of awareness of e-systems amongst the stakeholders involved. For example, participant PF5 explained:

> *…I need to learn how to use new technology, such as an e-government system…*

Problems could then be resolved. As mentioned briefly above, such an increase in awareness would be made possible by running a media campaign and ensuring that users have adequate understanding of e-government. Participant PM2 mentioned one way of raising awareness in the public sector:

> *[The] people can be aware from government's websites, newspapers, social media (twitter, Facebook) and media awareness campaigns…*

Awareness therefore emerges as one of the core factors of e-government development. There is in fact a lack of awareness at all levels of e-government use, from the top down and one of the ways proposed by the respondent users to address this was a media campaign.

6.6.2 Lack of Trust in E-Government

Another important social factor emerging through the both participants' levels was trust, i.e. in relation to the potential for utilising an e-government system. Trust is examined here and it represents a major challenge, as recognised by the interviewees stated that the older people in Saudi Arabia have trust issues concerning the Internet, especially in terms of using it for transactions and inputting personal information. For example, participant PM4 mentioned that:

> *… relatives old people do not trust any new technologies; such as computer smart phones, they prefer to [go] and do their transactions by visiting the local authority…*

Furthermore, the participants from governmental level explained that Saudi users are conservative in their approach to any new technologies, especially where personal details or financial transactions are involved. For example, participant PE16 explained:

> *…Saudis are really conservative people about giving personal details [and] health information and the Ministry has to adopt the right approach, in order to reduce users' concerns and create a trust relationship, so that the development of the e-government system can continue…*

Moreover, participant PE6 added:

> *…Saudi citizens find it more convenient [to use] face-to-face interaction methods… which they believe [are] more reliable and safer for providing personal details and making a transaction…*

On the other hand, there were some of participants from social level who believed that services provided over the Internet were private, but also impersonal, which could be a further obstacle to developing trust and inhibiting the formation of a connection between e-services and users. For example, participant PF1 added:

> *…It's still the e-services are secure for everyone, but users' trust still needs to be built up for a strong relationship between users and the Ministry.*

The interviewees agreed that it was important to establish a trust relationship between the citizen and e-government for the authentication of transactions between the government and the general population. There is consequently a need to establish transparency in the way the government works through e-government, so that this trust can be developed. In addition, it was emphasised that in order to utilise online services of Saudi Ministries, the Ministries first need to establish trust amongst users. As a result, it becomes clear that trust issues can affect the development of an e-government system, but this situation may be improved by building relationships between users and the Ministry personnel they encounter. This can even be done through online services. For example, participant PE2 stated:

> *The trust issue impacts on the development of [an] e-government system… We need to build trust with users by creating relationships between our employees and users in their use of online services…*

Participant PE4 also mentioned:

> *…the importance of creating [a] relationship between the government and citizens…*

The Participants, clarified how e-service users in Saudi Arabia consider trust to be the most important factor for them. Moreover, these users face problems arising from trust issues and so the senior IT managers interviewed suggested using TV campaigns, workshops, newspaper articles and conferences to resolve this. Participant PE9 stated that:

> *…The trust issue is a fact and if we want to solve it we need to [enhance] trust… by providing workshops, conferences, and newspaper and TV campaigns.*

Finally, trust emerges as a crucial sub-factor for developing e-government in Saudi Arabia and the influence of a lack of trust on this development is clearly evident from the interviewees' responses.

6.6.3 City Size in Relation to E-Government

The Participants identified that larger cities have more facilities to operate e-government services than the smaller cities in Saudi Arabia and they identified this as a factor affecting e-government development and reforms to e-service performance. As a result, it is a factor that would need to be addressed, in order to enhance productivity and provide high quality services for users. The interviewees stated that Saudi's main cities demonstrated high quality e-government performance, potentially helping to reduce bureaucracy, save time, improve services and develop further procedures. However, fewer e-services were available in the smaller cities. This was a point clarified by participant PE6:

> *…in the main cities, the departments have the fundamental ICT tools and facilities…*

Moreover, participant PE14 explained:

> *We are facing a huge demand for e-services that support local authorities, especially in villages and smaller cities…*

Participant PM4 elaborated on this further;

> *Not all the services are provided in all cities, especially not e-services that require verification…*

Consequently, the interviewees confirmed that the main cities in Saudi Arabia have extensive e-services in use amongst their local authorities, but this is affected by large amounts of data to process and congestion in the demand for services, associated with the high population in Saudi's main cities. Subsequently, the smaller cities experienced less congestion. For example, participant PE9 clarified that:

> *[In] the big cities, the Ministry departments (branches) deal with a large number of services, compared to small cities…*

Participant PE10 added:

> *The Ministry meets the needs of users in cities with large populations. However, occasionally, the government gives a limited amount of attention to villages and small cities…*

Moreover, participant PM5 declared:

> *Saudi Arabia is a large country in terms of its area and population and so we need to extend online services…*

This factor relates to the influence of city size on e-government development and results from an investigation of local authorities in both large and small cities. It was thus concluded from statements made by the interviewees, confirming the influence of city size on the development of e-government systems.

6.6.4 Users' Attitudes to E-Government

The factor of user attitude was an important finding of the present research. Furthermore, the interviewees themselves held the issue of user attitude to be very important, because of diverse components of culture and behaviour, which were believed to have a direct impact on e-government development. On the other hand, user attitudes are not necessarily based on anything other than the user's individual mind-set. For example, participant PE9 stated that:

> *…sometimes, users refuse to use new technologies [such as] an e-government system, for no other reason other than their personal perception of e-government…*

Moreover, participant PE13 stated:

> *The user plays a vital role in the e-government context, in terms of their behaviour and attitudes, which in turn determine their actions and attitude regarding e-government use…*

The participants also agreed that current differences in users' attitudes stem from the huge volume of information handled by technology. For example, participant PE12 elaborated that:

> *…to make sure the e-government system is developed successfully… we have to consider differences in users' attitudes…*

From the user's perspective, the findings illustrate that a favourable attitude to e-government plays a significant role in its ease of implementation; for example, participant PF4 explained:

> *…In my personal experience, I prefer to use electronic services provided by the government. However, it has taken time to familiarise myself with how to use these e-services…*

Participant PF3 added:

> *I'm not [familiar] with electronic services and sometimes I need a little more time to be able to use the electronic services provided by Ministries…*

Overall, the factor of user attitude is one that should concern the decision-makers involved in developing e-government. However, it was concluded in the present study that users' attitudes could be positively influenced by building a good relationship between users and government employees engaged in e-government delivery.

6.6.5 Familiarity with the Use of E-Services

The issue of users' familiarity with e-services accessed to carry out government transactions, or to satisfy other needs in relation to the government, indicate the importance of users being immersed in new technologies, so that they can learn how to use them and feel comfortable with these processes. This factor therefore exerts a significant influence on the use of e-government. However, some of the interviewees confirmed that they were not familiar with the purpose and benefits of e-government services, or with how to use them. For example, participant PM3 stated:

> *I know exactly what an e-government system is, but I need time to become familiar with using e-services. Sometimes, this can be tricky, especially with new or multifunctional e-services.*

Moreover, participant PF1 claimed that:

> *…many users have issues with becoming familiar with such IT systems and this is considered as a problem for the ordinary user, especially if we take older people into account…*

Familiarity (experience) with e-services can therefore positively impact e-government adoption and development and should be considered when attempting to meet users' everyday demands. As already mentioned in this chapter, citing participant PF4:

> *In my personal experience, I prefer to use electronic services provided by the government. However, it has taken time to familiarise myself with how to use these e-services…*

In this research, interviews were conducted with Saudi citizens, whereby they were asked about their experiences, attitudes, and familiarity with using an e-government system. It became evident that familiarity with the technology and processes was associated with users' trust and in turn, this facilitated the adoption and development of e-government services. This is further illustrated by a statement made by participant PM3:

> *…the government is seeking to make citizens' transactions easier through the provision and adoption of new electronic services for citizens' transactions within Ministries and government institutions, as well as familiarising Saudis with these (services).*

Participant PM2 added;

> *Familiarity with using the applications and government websites is required. Without this, it will be difficult.*

In fact, the lack of familiarity with e-services among citizens serves as a negative influence on their use and clearly hinders the adoption and development of e-government, given the importance of the user in this process. On the other hand, there is a prevailing lack of familiarity with the use of e-services, the Internet, and Ministry websites, which affects the adoption of new technologies, such as e-government. For example, participant PM5 acknowledged:

I'm not familiar with electronic services and sometimes I need a little more time to be able to use these electronic services provided by the Ministries…

In conclusion, this factor is indicated as a significant element in the shaping of users' opinions and it will inevitably have both positive and negative influences on the uptake of e-government services.

6.6.6 Availability of Electronic Services (E-Services)

The availability of e-services, software, applications and an e-system comprise what the user requires for government transactions and this availability or otherwise may affect users' perceptions. For example, participant PF2 pointed out;

There is poor availability of e-services at several Ministries, or else the services are not yet suitable for electronic delivery…

Meanwhile, participant PM1 admitted that

…not all the Ministries provide their services electronically…

There is in fact a clear lack of e-service availability, especially in situations where users need to submit applications. Moreover, it is not easy to meet the high demand for e-services in a big country like KSA, given its large land surface and population. In this regard, participant PM4 declared that:

Not all the services are provided in all cities, especially not e-services that require verification…

Moreover, participant PF5 stated:

…as a woman, some of the services are not available online for me…

And participant PM3 explained:

When I check online to find out how I can apply for any of the services that I need, the main issue is whether or not they are available. When the service is available electronically, then that is really beneficial.

In order to enable the successful adoption of e-government development, it must be considered that the availability of e-services on Ministry websites is a significant factor.

6.6.7 The Actual Beneficiaries of E-Government Services

A significant proportion of the users interviewed declared that they had benefited from the use of e-services and they cited a number of specific advantages. For example, participant PM5 declared:

> *I like to perform my transactions via the electronic system; it is really beneficial for saving time and effort…*

Moreover, participant PF4 explained that it is the benefits of e-services that will ultimately enhance development in general.

> *I believe that the benefit of the electronic services provided by the government is that they make life easier for citizens…*

User satisfaction is a factor frequently appearing in the literature and what emerged in the current research is the role of availability in that experience. This was confirmed by participant PM3:

> *...when services are available electronically, then that is really beneficial.*

Moreover, participant PM1 added that all user requirements would need to be available online, in order to meet users' demands for e-services:

> *[It would] be beneficial if the government made every single service available electronically, instead of us having to go to government offices or visit government Ministries in person…*

To conclude, the users interviewed highlighted the benefits of e-services, but cited the drawback of some being unavailable electronically.

6.6.8 The Extension of E-Government Services

Extending e-government services into Ministry infrastructure to include employees and decision-makers will have a fundamental influence on e-government development. Moreover, this will render government services more accessible and efficient for the user.

For example participant PM3 stated:

> *…some of the Ministries launch a new electronic service every day to extend their services, but there is still a need for more e-services.*

As mentioned previously, the Saudi government has already accomplished a great deal in its e-government service development and provision. Moreover, this continues to progress, although there is scope for improvement and updates. There remains a need for more provision with regard to e-transactions and for more services to be available electronically. For example participant PF2 declared:

> *There has been a huge improvement in the e-government system within several Ministries. However, I think more electronic services are required especially for women's transactions.*

On the other hand, Saudi Arabia is a big country, with a large and growing population. It therefore needs to be able to provide adequate e-services of sufficient quality, as pointed out by participant PM5:

> *Saudi Arabia is a large country in terms of its surface area and population; we need to extend the online services…*

Another Saudi user interviewed (participant PM3) proposed various approaches that could be adopted by Saudi's Ministries to extend and improve their websites:

> *…there are some Ministry websites that do not provide sufficient information. They need to improve, extend and promote their websites and online services.*

The above analysis shows that by extending e-government services as part of the overall development of e-government, e-government may be more successfully developed and adopted.

6.7 Summary

In this chapter, a thematic analysis was carried out, based on the research results. This study specifically focused on four Saudi Ministries, namely MOI, MOE, MOMRA and MOH. Four main critical factors were identified influencing the development of e-government in the Saudi context. The data were gathered from the interviewees' perceptions of the four Ministries where they were employed. Furthermore, the interviews were conducted with four senior managers from IT departments at each of the selected Ministries. Moreover, to gather supplementary data, the researcher carried out in-depth interviews with 10 Saudi citizens to discover their perspectives of e-

government services provided by Saudi Ministries. Therefore, the (qualitative) data produced the main research findings.

This chapter has identified and analysed the data and identified the factors of technological, organisational, environmental and social contexts. In the next chapter, the researcher presents a full discussion of the results and findings outlined in previous chapters. Moreover, in order to interpretive a deep understanding betweenthe literature in this field is further reviewed, along with the research findings.

Chapter 7: Discussion of Findings

7.1 Introduction to the Discussion of Findings

Chapter Six described the qualitative data collection for the present thesis, as well as an analysis of technological factors, organisational factors: environmental factors social factors. In this chapter, the research findings will also be discussed and these will be used to draw out, develop and validate proposals for a framework to evaluate how e-government could be developed in the context of Saudi Arabia. These data are summarised to serve as the basis of a conceptual framework, supported by the literature presented earlier in Chapters Two, Three and Four. The above-mentioned chapters also give an overview of the research background, and the theoretical and critical factors that would impact on such a framework. Moreover, the research questions from Chapter One are discussed in the light of the qualitative research methodology applied. In evaluating the key findings thus derived, the researcher will undertake a thorough study of the topic, appropriately summarising the results presented in Chapter Six and drawing conclusions from the discussion, as presented the factors which will be the discussion of (ICT) infrastructure (in section 7.3.1), discussion of the Portal (E-System) (in section 7.3.1.1), discussion of the network infrastructure (in section 7.3.1.2), discussion of applications (in section 7.3.1.3), discussion of ICT strategy (in section 7.3.2), discussion of the ICT vision (in section 7.3.2.1), discussion of ICT planning (in section 7.3.2.2), discussion of ICT funding (in section 7.3.2.3), discussion of the integration system (in section 7.3.3), discussion of organisational attitudes (in section 7.4.2), discussion of data-sharing between government organisations (in section 7.4.3), discussion of change management (in section 7.4.4) discussion of business process re-engineering (BPR) (in section 7.4.4.1), discussion of staff training (in section 7.4.4.2), discussion of policies and rules (in section 7.5.1), discussion of the cultural environment (in section 7.5.2), discussion of lack of awareness (in section 7.6.1), discussion of lack of trust (in section 7.6.2), discussion of city size (in section 7.6.3), discussion of user attitudes (in section 7.6.4), discussion of familiarity with e-service usage (in section 7.6.5), discussion of availability of e-services (in section 7.6.6), discussion of the actual beneficiaries of e-government services (in section 7.6.7) and discussion of extending e-government services (in section 7.6.8).

7.2 Research Findings for E-government Development

This section summarises the qualitative findings, thus analysing the interview results. The emerging need to establish a conceptual framework (Figure 8. 1) for e-government development has led the Saudi government to explore modalities for such adoption within the Kingdom. This section therefore evaluates the two levels of specific Saudi Ministries and the citizen perspective. In terms of identified the critical factors the derived from the both participant's levels and examined the TOE framework, as highlighted earlier in this thesis respectively see (Chapter four section 4.2). In the meantime, it is becoming increasingly important for Saudi Arabia to ensure the development of e-government throughout its Ministries and there are consequently several preconditions to be fulfilled. This study therefore evaluates aspects of existing e-government development, with particular reference to Saudi Arabia, listing the issues and challenges faced. This is how the four contexts affecting the adoption and development of e-government in Saudi Arabia were initially identified and they have been bifurcated into various divisions and sub-divisions.

In the present treatise, the discussion is conducted on the basis of findings derived using the research methods described in detail in Chapter Five. These pertain to primary data gathered through interviews (Senior IT governmental manager and Saudi users) and thematic analysis, each of the individual e-government factors being defined in turn. The following sections present and discuss the critical factors revealed.

7.3 Discussion of the Technological Context

As already stated in the Literature Review in Chapter Four (especially section 4.4), this study reveals the extent to which technological advancement could impact and influence how e-government systems are developed and consequently adopted to a satisfactory level of efficiency. In the research context, Saudi Arabia has the potential and capability to be a beacon of hope and progress for emulation throughout the Middle East. This could be achieved through the proper development of an e-government system in relation to aspects of ICT infrastructure, such as networks, databases and software applications. A thorough understanding and perception of associated ICT strategies, combined with ICT vision and action plans should be acquired, with a view to correctly

perceiving and understanding the Saudi technological context (Alfarraj et al., 2013; Alsaif, 2013). Moreover, Avgerou and Cornford (1998), Pudjianto and Hangjung (2009) and Alfarraj and Alhussain (2013), presented in the Literature Review, provide further explanation of the primary challenges linked with the efficient development of an e-government system.

Therefore, aspects have been included that relate to elements influencing the availability of data and information-sharing, in order to extend system integration; the Saudi Portal and its accessibility; the skills and capabilities of the users; the professionalism of the business and public sectors in terms of e-services, and the nature of local partners.

7.3.1 Discussion of Information Communication Technology (ICT) Infrastructure

The Saudi government can rightly boast of the successful development of an efficient and fully-functioning ICT infrastructure for developing e-government. In Chapter Six (section 6.3.1), for example, participant PE1 stated:

> *The Ministry of the Interior enhances and supports the ICT infrastructure for developing and adopting the e-government system or e-services…*

However, the adoption and development of e-government is hindered by the absence or weakness of an efficient and workable ICT infrastructure (Al-Shehry, 2008; Alshehri and Drew, 2012; Alfarra et al., 2013). It is also evident that there are a significant number of Ministerial departments in Saudi government, which have serious shortcomings in their ICT infrastructure, thus presenting problems for the development of e-government. Participant PE9 explained:

> *…in the Saudi Arabian context, the ICT infrastructure needs a lot of work and ICT investment, [but it] also still needs many [further] accomplishments to enhance the ICT infrastructure…*

However, the ICT infrastructure factor may be further divided into three sub-factors: a portal (e-system), networks and applications, as presented in the following sections. The research findings show that the three components associated with ICT infrastructure are representative of the critical changes required for existing processes.

7.3.1.1 Infrastructure: The Portal (E-System)

In the present research (see Chapter Six, section 6.3.1.1), some Ministries would appear to have the necessary e-system in place, but they possibly lack the required initiative and will to follow through with relevant procedures and e-systems. This is another factor that can ultimately impact the extent to which an e-government system is developed in Saudi Arabia. Several of these Ministries do in fact have their own portal, with both internal and external systems see (Chapter Five, section 5.9), as described by participant PE4:

> *Yes, we have an electronic government system (Portal) and it is operated and managed by the National Information Centre of the Ministry of the Interior and it does provide a range of e-services…*

In addition, for the construction of an e-system, there also needs to be the potential to effectively and efficiently integrate a very strong network, with advanced software and applications (see Chapter Six, section 6.3.1.3). This is unfortunately concluded as a national shortcoming, against which an e-government system would need to be designed, which could fill in the perceived gaps. Nevertheless the findings show that a portal could support the development of e-government system (see Chapter Six, section 6.3.1.1), as emphasised by participant PE14:

> *…there are e-services via the Ministry webpages and the Ministries provide online services [such as] online applications and facilities for making online requests…*

On the other hand, it has been observed that organisations are seemingly unwilling to make the necessary investment in this regard. Moreover, it is the common complaint of many organisational leaders that without access to adequate training, they are hampered in their attempts to build upon their capabilities.

7.3.1.2 Discussion of the Network Infrastructure

The network factor has been identified in many previous studies on new technological advancements. The successful establishment of a modern communications network is a significant achievement attributed to the Saudi government. Associated studies have indeed highlighted this as a major attainment, since it represents long-term infrastructure (Al-Shehry, 2008; Brown and Thompson, 2011). However, in the literature (section 4.4.1.1.), the majority of developing countries are all noted to have

serious shortcomings in terms of their infrastructure, although Saudi Arabia is credited more positively in this respect (Al-Shehry, 2008).

In the review of the literature for this thesis, it was also identified that at both national and international levels and in the long term, the above-mentioned aspect is a major determinant for the successful development of an e-government system. Moreover, efficiency in this area is anticipated to encourage both the private and public sectors to take on a more proactive role in developing and building upon associated communication networks and services (Palanisamy and Mukerji, 2012; McLeod and Pippin, 2009; Conklin and Whiet, 2006; Bakry, 2003). In addition, the literature illustrates how the long-term success of e-government adoption crucially requires an effective and high-performing ICT network (Wanga et al., 2004)

Also revealed in the case studies (see section 6.3.1.2), the successes observed in building upon the network have not necessarily been followed through with highly specialised networking, which is a shortcoming at Saudi Ministry level. Thus, some Saudi Ministries are shown to be working below their expected level of efficiency, for want of higher quality and more advanced software to execute their day-to-day operations within a strong network. Many representatives from Saudi Ministries interviewed for this study complained that the absence of highly specialised networking expertise had hindered their ability to contribute more effectively to network performance.

Furthermore, one of the research findings cited the network as a key factor determining the success of robust e-government adoption and development, ensuring that where necessary, operations should be efficiently and appropriately outsourced. Thus, the presence of an effective and efficient network is considered crucial for the success of e-government system adoption and development. For example, participant PE8 declared:

> *[T]he network is important… This is even more necessary in consideration of the huge volume of data processed in the Ministry… it has a huge ICT network to handle the data passing through all departments.*

The researcher consequently perceives three aspects of ICT infrastructure as contributing to the initiation and enhancement of technological progress, especially in reference to e-government. The network is one of these infrastructural aspects,

essentially representing a sub-factor of technology that directly impacts on development and e-government development in the Saudi context.

7.3.1.3 Infrastructure: Applications

Appropriate software and applications that utilise e-services could also be considered vital to the success and development of the type of ICT infrastructure associated with e-government system development. The findings for these functions reflect the progress and maturity exhibited by various Saudi Ministerial IT departments responsible for such e-services. These findings were drawn from interviews conducted to identify the standard of work and facilities required to enable e-government. It was subsequently revealed that most of these standards were low and incompatible with the requirements of effective e-government performance. For instance, various applications and software have been adopted, which should have been an impetus for IT departments to offer e-services and enhance the development process (see Chapter Six, section 6.3.1.3). The Literature Review concludes that there is significant scope for improvement to applications that impact the development of e-government. Addressing these would in turn contribute to successful e-government adoption (Ebrahim and Irani, 2005).

For example, the availability and successful integration of state-of-the-art software applications is a key factor in ensuring the long-term success of an e-government project. The current findings (section 6.3.1.3) lead to the reflection that various Saudi Ministries already implement a range of applications and tools of this nature, but most are identified as relevant to the initial stages of e-government system development, as clarified by participant PE14:

> *[T]he applications and tools need huge improvement to provide quality e-services… from my perspective… the Ministry's staff should have access to the required ICT facilities…*

The Saudi government is at present endeavouring to establish an extensive e-government system to ensure that Internet services are widely implemented An overview of the functionality available at national and governmental level also reflects that the majority of Saudi Ministries have weak ICT infrastructure and associated expertise, as shown in the findings in Chapter Six (section 6.3.1.3), whereby participant PE15 expressed the opinion:

…to ensure [the enhancement of the] productivity and efficiency of the entire Ministry, it should update its applications…

This current research sets out to design a conceptual framework which will facilitate the provision of day-to-day e-services for Saudi citizens and residents, thus enabling them to conveniently source whatever they seek in any government database they attempt to navigate. As a result, there also need to be regular controls to ensure that the e-government system consistently provides whatever it was designed and programmed for. Therefore, applications are a key factor of successful and efficient e-government development. However, the Saudi government itself is also considered as pivotal in permitting data to be effectively transmitted across different levels of e-government.

7.3.2 Discussion of ICT Strategy

The ICT strategies adopted in e-government are necessarily multi-faceted, enabling the various aspects associated with the vision and plans for e-government development to be addressed (Jansen, 2005; Chen et al., 2006; Parisopoulos et al., 2009; Alshawi and Alalwany, 2009; Seifert and Chung, 2009). Moreover, ICT strategies provide the necessary guidelines on how to navigate systems and processes, so as to ensure effective e-government implementation (Lowery, 2001; Moon, 2002; Heeks, 2002; Ndou, 2004; Jansen, 2005; Chen et al., 2006; Parisopoulos et al., 2009; Alshawi and Alalwany, 2009; Seifert and Chung, 2009). The present research findings (section 6.3.2) do in fact show that individual Ministries in Saudi Arabia have efficiently implemented e-government, in relation to the level of priorities assigned, although greater efficiency needs to be built into the new ICT to be rolled out in the near future. For example, participant PE1 stated:

[T]he current ICT strategy is more than the current requirements, and provides the necessary vision to implement a successful strategy…

Additionally, an ICT strategy must be based on two key factors for enhancing ICT strategy, namely vision and planning. For example, participant PE9 confirmed:

[This] has to be with [a] strategy, planning and vision.

A thorough evaluation of existing e-government would indicate from the findings that workable ICT projects have been incorporated into Saudi Arabia's Ministries and this is

valid for e-government. Moreover, it is important that the ICT strategy adopted in the Saudi paradigm is organised for greater efficiency and returns.

7.3.2.1 Discussion of the ICT Vision

In terms of a vision for ICT strategy, associated with studies already undertaken on successful e-government development (for example, Alshawi and Alalwany, 2009; Al-Azri et al., 2010; Abdalla, 2012) and as described in Chapter Six (section 6.3.2.1), Saudi Arabia's vision for ICT projects and e-government is elaborated as a roadmap, enabling more efficient progress for the future of the nation and providing clarification of the levels of success attained in the research findings. For example, participant PE16 stated:

> *The vision for ICT strategy in the Saudi government has addressed many of the keys to success… of course, we need to improve it… if there is no vision, no strategy or project will be successful…*

The vision for such ICT projects could contribute to the creation of an e-government system which is constantly adapting in relation to evolving challenges, as the Saudi government presents itself to the wider world. In addition to considering the qualitative data in this study, the present research is unequivocal about current e-government systems that incorporate aspects of vision and planning from the perspective of senior managers at Saudi Ministries. In consideration of the review of the literature and the interviews conducted in this thesis, shortcomings are identified, whereby the Saudi Government's Vision 2030 for government bodies demonstrates gaps in its vision for ICT projects (see Chapter Two, section 2.3, especially section 2.3.1). In terms of the current interview findings, uniform perspectives were revealed concerning the vision for e-government projects already launched in the year 2016. The present research had already identified the importance of vision as a factor of e-government system development, even before the announcement of Saudi Arabia's Vision 2030. Therefore, this is a notion that has taken some time to take hold and is even now little understood or embraced across all levels of senior government offices.

7.3.2.2 Discussion of ICT Planning

In consideration of the Literature Review in Chapter Four, especially Lam (2005), Ebrahim and Irani (2005) and Akman et al. (2005), the key factor when planning ICT or e-government projects is that the overall paradigm follows a set schedule during the

development of e-government. Yesser has two action plans for e-government projects, each beginning at five-year intervals, where a 'new term strategy' is designed with the launch of new approaches. The interviewees alluded to the current e-government programme (Yesser), stating that it has significantly contributed to progress so far (Yesser.gov.sa, 2015). For example, participant PE14 explained:

> *…the MCIT established an e-government programme called [Yesser] which is the [planning] for any e-government project…*

Saudi Arabia has actively and proactively adopted ICT processes towards building an efficient and effective ICT infrastructure. This runs parallel to developing a digital economy, in order to facilitate the progress and prosperity of citizens and expatriates, and this is already underway in Saudi Arabia. In this regard, the Saudi government is credited with proactively taking the required steps to ensure such facilities are provided for its citizens and the businesses operating in the country, as several initiatives of this nature have been launched, experiencing success in downstream e-services (Yesser.gov.sa, 2015). The MCIT is responsible for the planning of e-government and ICT projects, the e-Government First Action Plan (2006-2010) and the e-Government Second Action Plan (2012-2016). For example, participant PE9 added:

> *…also, the MCIT [have implemented] action plans, two action plans: first and second… for [an] e-government programme [Yesser]…*

To conclude both the Literature Review and research findings, and in consideration of the action plan and proper identification of any discrepancies observed, the inherent complexities may be simplified. A specific ICT strategy could be shown to have outlined the basic parameters associated with the gradual implementation of modular phases. This would in turn ensure the sustainable outcomes of an entire e-government system in terms of technology. It is therefore also equally important that the action plans executed are as clear as possible. In the Saudi context, the government has two action plans for developing its e-system, aimed at raising the level of quality.

7.3.2.3 Discussion of ICT Funding

Saudi Arabia's e-government system not only incurs technical costs, but also costs associated with training, consultancy and many other aspects. Due to a lack of funding, however, there may be significant cost over-runs within a project and these need to be

managed, as the above scenarios can lead to the abandonment or cessation of a project, or else an e-government project can simply fail as a result (Akomode et al., 2002). Therefore, to be able to provide excellent service, there needs to be adequate funding and this is of vital importance (Okiy, 2010). In fact, goals can only be attained, and staff deployed, engaged and integrated through appropriate funding.

In the light of the above, when large-scale e-government projects are to be carried out, funding (or rather the lack of it) can prove to be a hurdle. The evidence from the case studies in the present research suggest that the budgeting and funding of e-government projects can strongly affect their sustainability, as well as their initial development. It is therefore essential that MCIT funds all national ICT projects, such as e-government projects. All the interviewees in this study stated the importance of funding in parallel with the monitoring of projects (see section 6.3.2.3). For example, participant PE1 declared:

> *There is funding for e-government projects, but this funding lacks monitoring…*

These findings reflect those gathered from the literature, as presented by Heeks (2003), Dias et al. (2014) and Okiy (2010). The above authors also emphasise the need for funding in e-government, so that the challenges of implementation can be effectively met. A comprehensive e-government system in Saudi Arabia would be subject to initial expenses, which must be thoroughly assessed in advance. These expense should also be balanced against a long-term reduction in the speed of movement towards online services. After thorough analysis, the present research confirmed that Saudi Arabia's e-government system does not have adequate numbers of competent personnel to monitor funds for e-government projects. Hence, it is essential for Saudi Ministries to establish a strategic ICT plan to obtain funds and monitor them properly.

7.3.3 Discussion of the Integration System

Given the present research findings and a review of the existing literature, it is strongly suggested that the efficiency of e-government system integration will contribute to more effective and extensive e-government adoption. Hence, one of the most important factors of e-government adoption and development is integration, whether G2G, G2C,

G2B, or G2B, or government to employee (G2E). This will ensure the overall success of e-government integration.

The data findings (see section 6.3.3) show that an e-government system can in fact ensure greater efficiency on the ICT highway, but only provided there is close alignment and collaboration between the Saudi Ministries involved. Therefore, this study is aimed at motivating the alignment of these various decision-makers, with an effective and relevant e-government system being systematically and consistently introduced into other government departments. There is consequently a need to institute proper and efficient ICT infrastructure, which is in any case an e-government system requirement. For example, participant PE16 declared:

> *…we are limited with other Ministries…*

Moreover, (PE16) mentioned:

> *[T]he importance of an integrated system and how the benefits can be gained.*

In addition to the current research findings (see section 6.3.3), it was revealed in this study that the sub-factors of integration and connectivity in Saudi e-government need to be more closely aligned, in order to enable a higher level of user participation in the online system and e-processes designed. This would enable a multi-faceted response to user requirements and ease of use, with subsequent enhancement of the development and adoption of e-government. Multiple authors, such as Layne and Lee (2001), Al-Khouri and Bal (2007), Al-Sebie and Irani (2005) and AlSobhi, Kamal and Weerakkody (2009) have all proposed methodologies for the efficient implementation of a formal e-government system. Thus, a requirement for the horizontal and vertical alignment of proposals received over time has emerged (Weerakkody and Dhillon, 2008).

In addition to the interview findings, the level of conductivity between Saudi Arabia's Ministries within e-government has been demonstrated. Indeed, Ministerial departments have the capacity to draw together, but it is essential to establish connectivity between entire Ministries and the whole organisation of government in that context. Moreover, the findings point to the current existence of an e-government system known as 'SAFEER'. This is a portal exclusively dedicated to the MOE's higher education

section, whereas 'NOOR' relates to general education. The MOI does in fact have its own e-system in the form of the SAUDI Portal, but this only operates between a limited numbers of Saudi Ministries and does not provide access to all government data. In fact, the SAUDI Portal needs the support of high-level decision-makers in Saudi Arabia to implement and develop its accessibility as a comprehensive and fully integrated e-government system.

7.4 Discussion of the Organisational Context

As part of the Literature Review, organisational factors were cited as traditional management procedures, which must be constantly updated. They require amendment, in order for robust change to be brought about in e-government development. The change process is supplemented by incremental as well as radical changes in the Saudi context. In this research, sub-factors were derived; for instance, senior management, organisational culture, human capability, change management; challenges, and problems. These are all taken as essential factors of e-government development and adoption. Within developing nations and more specifically, the Saudi Arabian context, similar factors have already emerged on this point. Corresponding data were also observed in the present research, as well as a close relationship being confirmed between the abovementioned factors and e-government systems. The critical organisational factors stated in Chapter Four and those identified as part of the research are consequently presented (Al-Fakhri et al., 2008; Al-Shehry, 2008; Altameem, 2007).

In the Saudi context, e-government has indeed been developed to an extent, but various factors must still be considered and planned for. These factors are clearly stated in Chapter Six. All government departments are affected when an e-government system is established and this has been proved through analysis in the present research (section 6.4). Moreover, the challenges grow following development of e-government and such systems need to be sustained (Yesser, 2015). Since 2003, a major e-government project has been executed in Saudi Arabia, namely the Yesser project (see Chapter Two, especially section 2.6.1). Its organisational development has been relatively strong and efficient, but there is still a need for further change and for the emerging challenges to be met. It is essential that such a project is continuously revised and updated to meet national requirements. The organisational factors, responsibilities, roles and employees'

needs must all be considered. However, during the research analysis, it was observed that the organisational structure in Saudi Arabia's Ministries is heavily bureaucratic, which is one of the reasons why project leaders are faced with so many obstacles. The present organisational structure and existing e-government systems have a significant impact upon Saudi Arabia's e-government development. The following section examines the key influential factors.

7.4.1 The Organisational Context: Senior Management

The findings in Chapter Six (see section 6.4.1) identify senior management as pivotal in the development of e-government, particularly in the Saudi context. This includes individual support for the staff working on such projects, as employees need to be motivated and have a sufficient level of confidence. This confidence and motivation will mainly stem from the belief that they have the capacity to establish a successful e-government system. Through thorough analysis, it was revealed here that in the context of Saudi Arabia, senior management support is indeed essential for e-government development. This may be deduced from the research interviews, whereby analysis showed how senior management personnel in Saudi Arabia's Ministries were observed as playing a vital role in helping to implement new technology and to bring about drastic and enduring change in each individual Ministry. Without suitable and adequate support from senior management, it is in fact impossible to develop and implement e-government projects. Various success stories presented in the literature also show that effective top management is essential (Caldow, 2002).

In Chapter Six, for example, the importance of the listed sub-factors is explained and the interviews conducted with members of Saudi Ministries consequently illustrate how, although senior management are sometimes considered capable of ensuring efficiency, completely the opposite may also be experienced. For example, participant PE4 added:

> *We need [a] new generation of senior management with [a] high level of qualification… they need to improve their performance.*

Participant PE5 was also positive about the potential impact of younger members of senior management:

> *…younger [members of] senior management support the adoption of new technology…*

In addition, the interviewees believed that strong commitment and awareness were required to prevent any kind of delay in the development of e-government. As an illustration of this, participant PE8 may be cited:

> *…there are some senior management members [who] support the idea of changing to new technology or developing the quality of performance and some senior management members like to retain traditional procedure.*

Senior management therefore emerge as a key factor out of all those highlighted as most important in this regard. Hence, it was identified in this study that support from top management is vital at all stages of e-government project development and implementation within Saudi Arabia's Ministries and this is especially the case during the earlier stages of this process.

Moreover, Saudi Arabia's Ministries need an appropriate layer of middle management to fulfil their pivotal role; while senior management are expected to promote positive enthusiasm, commitment and support amongst all those involved in the development of e-government, in order to ensure an effective outcome. In addition, the findings from the interviews conducted with Saudi Ministry employees further demonstrate the importance of support for e-government development from senior management.

7.4.2 Discussion of Organisational Attitudes

In statements made by interviewees from the four Saudi Ministries explored in this research study, it was revealed that some fellow staff-members had a very fixed mind-set. For example, participant PE9 was unequivocal:

> *…during meetings and discussions on deciding the strategies to adopt and initiate changes in a certain area, it is often observed that some individuals [are influenced] by their attitudes…*

Accordingly, this was in fact considered problematic for the development process, with the possibility of having to face strong resistance in a variety of different forms. Some of the Ministries appeared to employ staff who were interested in maintaining a more traditional system, rather than embracing new technology. For example, participant PE9 declared:

The adoption of e-government is of huge importance and we cannot do this with resistance to change.

Therefore, it may be deduced that the development of new technology, such as e-government, requires a work performance system that demands extra effort and time. The latter imposes limitations and so resistance is often demonstrated amongst less highly educated Ministry employees. Nevertheless, senior staff members from IT departments at Saudi Arabia's Ministries in the present case clarified that through appropriate training, it could be possible to reduce the level of resistance, as this was partly due to the management's fear of losing power and authority.

The interviewees in this research were selected for their potential to provide insights into the perspectives of high-level employees at Saudi Arabia's government Ministries, which is how they had originally developed their performances. With such an approach, operations may be performed more rapidly, with higher levels of development and more convenient access to information. In general, however, it was observed that Saudi Arabia's Ministries tend not to promote a culture that fosters the development and adoption of e-government.

7.4.3 Discussion of Data-sharing between Government Organisations

The findings show that the data-sharing issue could be addressed by establishing an e-government team within each Saudi Ministry. Such a team would manage this issue and resolve it while data-sharing or integration takes place. Any problems faced by the Saudi government during the development and implementation of an e-government system could therefore be easily addressed by these teams. Even if technical issues are not resolved, the communication and coordination processes required for successful e-government development would at least be under control.

In addition, the findings for the sub-factors of the data-sharing process (see section 6.4.3) must be thoroughly assessed on introducing e-government into Saudi Arabia's Ministries and other government bodies. In order for data-management and sharing to take place more expediently, Saudi Ministries could apply the national standards set out for data. The results of this research in fact state data collection as a criterion, but thus far and based on the evidence obtained, high quality data has not been sufficient to help

Saudi Arabia's Ministries make more effective decisions. As the interviewees stated, the most important concern in data-sharing - for example, in the MOH - consists of patients' rights. Participant PE15 thus declared:

> *... we have strong policy on sharing information (patients' rights)...*

Moreover, confidential and sensitive information from Saudi Arabia's Ministries must be sensitively managed, in order to be able to provide high quality services and information. The successful development of an e-government system was observed by the interviewees from the Ministries as producing high quality data (see section 6.5.3). Moreover, the literature confirms a relationship between e-government and data quality (Gil-García and Pardo, 2005).

7.4.4 Discussion of Change Management

In the context of Saudi Arabia (see Chapter Six, section 6.4.4), it was identified that change management is not only complex, but also rather challenging. The characteristics of Saudi Arabia's Ministries include inflexibility, laboriousness, and excessive bureaucracy, which is why the issue is much more evident at government level. Change management in general is described as a complex, but dynamic process. Moreover, a perspective of Saudi Arabia's Ministries was gathered from the present research, revealing that top management play a vital role in bring about radical change, although they still exhibit reserve in their management style. The data analysis in this current study shows that this is due to the prevailing mentality. For example, participant PE4 stated that:

> *...decision-makers should plan change management in such a way that they can replace [the] old e-government system with a superior and improved one...*

Nevertheless, it cannot be ignored that Saudi e-government needs to implement change at Ministry level. The large Ministries making up Saudi Arabia's system of government consist of multiple components and are therefore intricate, which is what makes it difficult to bring about change. However, for these Ministries, with special reference to those examined in this thesis, an e-government system would not face so many difficulties, if a proper change management procedure were to be followed. According to Leavitt (1965), every time an organisation's system is replaced or altered, much more

widespread change occurs. Moreover, the Literature Review clarifies how in successful e-government implementation, change management is considered as a critical factor (Lessa et al., 2015).

In fact, complexity is inevitable wherever change is carried out and this complexity should be handled via rapid and robust decision-making. Competitors should always be left behind and leaders must ensure that a public organisation has the ability and resources to successfully implement and weather change (Scholl, 2005). This is because it can be difficult to replace traditional systems. The way Ministries operate in Saudi Arabia has nevertheless altered dramatically in recent years, mainly due to the use of e-government and ICT. Moreover, participant PE15 stated:

> *…to develop proper e-government services, we have to ensure that strategic change management [is] fully implemented… so that we can make sure that e-services are going in [the] right direction…*

The style adopted by members of senior management is therefore new and their functions are facilitated through outsourcing and business process re-engineering (BPR). Public organisations in other developing nations have also brought forward familiar practices (Van Veenstra et al., 2011).

In most cases, Saudi Arabia's Ministries are in fact unable to apply principles of change management, as their employees refuse to acknowledge that any kind of change is required. This is an example of how awareness is essential if appropriate changes are to be made prior to the introduction of e-government. Organisational change may also be successful if a vision has already been established and a strong leader can help implement this efficiently (Mabin, Forgeson and Green, 2001).

Saudi Arabia's decision-makers must ensure broad scope in e-government at the Ministries concerned; convincing personnel that without regulatory, managerial or technical re-engineering and staff training, successful change is impossible. Change management is in fact negatively affected by senior managers, who persist in entrenched, traditional management styles and follow outdated processes and procedures. In addition, through multiple channels of service delivery, change can be developed on a much wider scale.

In the light of the points examined earlier, e-government development has been found to be impacted by change management. Therefore, the latter is considered as a critical factor in this process. For the purpose of the present thesis, change management has been further divided into two sub-factors: BPR and staff training.

7.4.4.1 Change Management: Business Process Re-engineering (BPR)

BPR represents a significant factor of change management, enabling performance to be developed with maximum efficiency. BPR is a factor that can increase the productivity of an organisation and so the government of Saudi Arabia is being encouraged to adopt BPR procedures. At the same time, this would point to the construction of electronic office systems. Through the proper application of BPR, there can be positive improvement, increased productivity and a streamlining of the workforce with reduced headcount. This would in fact re-engineer entire processes through automation in just a few steps.

BPR is briefly mentioned in Chapter Six (see section 6.4.4.1) as an important aspect of change management, with crucial implications for e-government development. E-government systems are basically introduced to broaden and develop the scope of government processes (Heeks, 2002). Across all Saudi Arabia's Ministries, there is extensive effort being made to provide more efficient and timely e-services through smart and lean decisions. Fundamental change will help these Ministries function more efficiently and have a major impact on such processes.

The findings from the interviews conducted at the four Saudi Ministries in the present study reveal a need to establish change management, as well as a defined BPR process, important for e-government development. For example, participant PE9 indicated the:

> *…need [for] change to be more oriented towards BPR in terms of e-government system development… BPR [is] one of the needs [for] change in the Ministry.*

Moreover, participant PE3 added:

> *BPR is the best option when it comes to the advancement of [an] e-government system in [the] Saudi context…*

Critical monitoring is also essential during development, as part of change management. In addition, the interviewees suggested that the process be carefully planned, controlled and monitored to achieve efficiency. However, according to Attaran (2004), a high failure rate is associated with radical and extensive BPR projects.

7.4.4.2 Change Management: Staff Training

As mentioned earlier, another significant sub-factor of change management is staff training. For sustainable change management, according to the interviewees in the present research, this is essential. For instance, ICT or e-government system training programmes have played a crucial role in the development of e-government systems (see Chapter Six, section 6.4.4.2). At Ministry level in Saudi Arabia, however, there is still a shortfall in the number of ICT professionals being trained and qualified. For example, participant PE4 emphasised that:

> *There are training programmes, but limited…*

Grimes (1983) states that e-government can only be adopted and successfully developed by offering appropriate training programmes for the personnel concerned. Moreover, systematic training is required within Saudi Arabia's Ministries and this training can only be carried out if the senior management themselves have a thorough understanding of ICT and what is required. They must also be willing to provide appropriate quality in their training programmes. Al-Azri et al. (2010) and Abdalla (2012) have even shown a direct correlation between training and success, namely that training is an essential element, directly affecting skills implementation and e-government outcomes.

Furthermore, this research finding gives insights into trainees and their programme teams, with proper feedback being provided on developing, adopting, implementing, success, failure or level of satisfaction/dissatisfaction with a training programme. For example, participant PE5 admitted that

> *The Ministry has [a] low level of technical training [for] when there is a problem or need…*

Training strategies must be appropriate for e-government development during the initial stages, in order to help employees realise the importance of what they are involved in and to motivate them with the promised rewards of e-government. Srivastava and Teo

(2010) and Alshehri and Drew (2010) find training to be a highly necessary factor in the success of e-government.

Additionally, in the context of Saudi Arabia's Ministries, skilled personnel demonstrate less resistance when change is to be adopted. Hence, for e-government development, change management, ICT in education and skilled personnel emerge as key aspects and this is gleaned from the findings of the present study, as well as from the Literature Review.

7.5 Discussion of the Environmental Context

A consideration of environmental factors cannot be seen in themselves as a means of resolving problems in Saudi e-government development, according to the findings in Chapter Seven, where three main sub-factors were identified. These include the Saudi Ministries concerned, with the development of a regulatory framework, significance being awarded to policies and rules, and the cultural environment. These critical environmental factors are described in Chapter Four, as extracted from the literature (Bakry, 2004 Al-Fakhri et al., 2008; Morgan, 2010).

7.5.1 The Environmental Context: Policies and Rules

In the findings from an analysis of the research data, it is evident that policy has a strong influence on ICT projects and development programmes, such as e-government development. The employees interviewed for the present study stated that the progress of e-government is actually affected by policies, rules and the decisions of politicians. In short, providing easy access to technology, particularly the Internet, is the main objective of e-government. Developed and free economies have a comparatively higher access rate than developing countries. Therefore, extended efforts are required from the governments of developing countries to ensure that e-government projects are adequately implemented, thus guaranteeing universal access to technology, especially the Internet. The issues surrounding policy are in fact on the rise in many countries, due to radical changes in the public sector worldwide and procedures for conducting business activities (Okiy, 2010). Effective policies must therefore be formulated by government organisations (Attaran, 2000).

Aside, the employees at Saudi Arabia's Ministries need to be protected by policies and rules. The Saudi public sector establishes legal policies to govern procedures, such as the signing of contracts for services, but where all activities are performed electronically, no paper contracts exist. For example, participant PE4 stated:

> *[T]he Ministry works according to policies and rules and all projects, including e-government projects, follow the same policies and rules…*

Therefore, new rules and policies may need to be considered with the introduction of e-government development. It must also be added that any e-government system developed in Saudi Arabia should include financial institutions, which is why reliable and sound decision-making is required (see section 6.5.1).

In addition, the success or failure of e-government development is also based on the political environment of a nation and this has particularly profound implications in developing countries (Heeks, 2006; Weerakkody, et al., 2011; Korteland and Bekkers, 2007). Public sector decision-making is affected by higher political authorities (West, 2005). However, the decisions made may indeed be positive, which can help establish new e-government systems. On the other hand, decisions may take a protracted time to formulate and implement, if considered inappropriate. In the context of Saudi Arabia, e-government development has been provided with a sound legal platform by the Saudi government at national level. In fact, several challenges and obstacles have been effectively managed to allow the introduction of new values and a process for change. For example, participant PE8 declared:

> *…to launch [an] e-government system to serve users and meet their satisfaction… policies and rules [must be followed]…*

Various other countries have recognised the role of politicians in developing e-government systems, with political support being correspondingly influential in the Arab world (Zaied et al., 2007). A few of the Ministry representatives interviewed in the present study actually gave evidence that their respective Ministries were rather more advanced in this area. Levels of trust and credibility for these Ministries were high as a result. Importance must therefore be attached to the formulation of policy, in order to be able to initiate and maintain a smooth-running e-government system.

From the earlier discussion, it may be concluded that in Saudi Arabia's Ministries, e-government development has been hindered by an absence of digital signature rules; security; the advancement of authentication. E-government systems have not been provided with an umbrella under which to function, since there has been no proper framework available, with no legitimate transactions taking place. As a result, this research has found the issuing of policy to be critical to the success of e-government development.

7.5.2 Discussion of the Cultural Environment

Various cultural characteristics tend to be common across the public sector in developing countries. In the case of Saudi Arabia, the findings in Chapter Six present further elaboration from interviewees on Saudi culture, which is described as richly textured and complex. The participants referred to the distinctive nature of e-government development in Saudi culture, stating that these peculiarities should be taken into consideration. For example, participant PE3 claimed that:

> *…one of [the] challenges and obstacles that face the development of [an] e-government system in Saudi Arabia is the culture of Saudis…*

From the challenges highlighted, the interviewees described the execution of an e-government system in Saudi Arabia as being especially difficult, due to the cultural factors that arise and the way in which the entire government has such a strong influence on e-government development. For example, participant PE4 pointed out:

> *…there are some differences in Saudi culture [according to] different Saudi regions… Saudi culture is hugely different from other cultures…*

Due to the presence of Islam's Holy Mosques in Saudi Arabia, it is a country of unique and high esteem in the Islamic world (see Chapter Two, especially sections 2.3.3 and 2.4). Saudi culture is therefore intrinsically and predictably impacted by religion and represents a dominant force in the shaping of common norms, practices and traditions (see section 6.5.2). The crucial element emerging from the relevant literature is indeed the cultural factor, which can affect the implementation of a change process. Such change may relate to socio-technical systems, such as e-government (Alshehri et al., 2012; Khalil, 2011; Choudrie et al., 2010). Despite the complexity of the Saudi cultural climate, this is a factor that must be considered, as it is critical for success. Made up of

traditions, language, demography and beliefs, and extending across the nation, it impacts e-government development. For instance, participant PE6 pointed out:

> *…with regard to the development of [an] e-government system, the issue of culture is [a] very important [one]… faced by the Ministry when it comes to developing new technologies, such as e-government systems…*

Moreover, participant PE7 emphasised:

> *…the importance of cultural differences in e-government system development… it is cultural differences which play a vital role in [the successful] development of [an] e-government system…*

Aside from the above, the development of e-government systems is affected by the level of support they receive. The power rests in the hands of certain senior managers and they need to make effective use of this, in order to be able to develop e-government systems and ICT projects. Hence, culture remains one of the essential elements for success and so it cannot be ignored when developing e-government system policy.

7.6 Discussion of the Social Context

The findings from the present research (see section 6.6) also reveal additional social issues to be addressed and resolved, in order to enable the successful and sustained development of e-government. Aspects of these issues have been highlighted and discussed using a qualitative approach, as with the Ministries and public sector on the e-government services. Moreover, the findings derived would indicate an apparent requirement for more extensive and closer links between the various social factors associated with e-government. Social challenges therefore emerge as a key aspect in the adoption of e-government in the Saudi context. As a result, previous researchers have studied the social factors of potential influence in this regard (Al-Fakhri et al., 2008; Al-Ghaith et al., 2010; Alshehri et al., 2012; Alateyah et al., 2014; Alghamdi et al., 2014; Albesher, 2015).

To promote advancement and modernisation in Saudi society, the Saudi government could be encouraged to be more responsive in the development, adoption and implementation of e-government; geared towards the ultimate benefit of users in the relevant context. It is also revealed in the present study that the means of e-government development can contribute to its success and its accompanying processes for the

benefit of Saudi society. Socially, for example, the Saudi government appears to have addressed problems of a lack of awareness of e-government amongst its citizens, as well as their lack of trust; negative attitudes; lack of familiarity with the use of e-government; unavailability of e-services; failure to consider the actual beneficiaries of e-government, and need to extend e-government services, while also taking into account city size.

The subject of this research is based on the critical factors that influence the development of e-government and these are listed earlier. Each of the following sub-sections deal with the constructs individually, as well as the related theoretical justification for including them in the conceptual framework. The critical factors of the research have also been proposed for the development of e-government under the conceptual framework designed in this study, as well as to determine the rate of adoption and the anticipated behaviour of citizens towards e-government services. Furthermore, the relationship between independent and dependent constructs is outlined.

7.6.1 The Social Context: Lack of Awareness

In social context the researcher gathered two levels of perspectives as mentioned in chapter Five (Senior IT managers within the Saudi Arabia's ministries and Saudi user on the e-government services), This study presents additional problems relating to awareness, whereby not all individuals in a population will necessarily have any idea that e-government systems are even being developed. This is an issue referred to by some of the interviewees in this study from. Top management and executives are responsible for introducing e-government systems, but they have so far been unsuccessful in providing the relevant information for all Saudi users. Furthermore, although e-government systems are familiar to IT departments, they have not generally been implemented or used Ministry-wide. There are even many Saudi Ministry employees who have no knowledge at all of e-government systems being used where they work, or whether these will be applied in future. Furthermore, in the present study, it was the participants themselves who highlighted the problem of limited awareness and poor knowledge of e-government systems amongst Saudi users. For example, participant PE3 stated:

> *…lack of awareness is one of the important challenges that the Ministry faces in e-government system adoption… at [the] level of user awareness, it's difficult to convince [people] to use [a] new e-system…*

Moreover, participant PF5 explained:

> *…I need to learn how to use new technology, such as an e-government system…*

In the Saudi context, an e-government system would cater for the needs of Ministries and users alike. Shopping malls, the media, newspapers and government agency websites have been used to run public sector awareness campaigns so far, but there is still a lack of awareness of e-government development on the part of potential users (see Chapter Six, section 6.6.1). For example, participant PE10 mentioned one method applied to raise awareness in the public sector:

> *…awareness can be improved by explaining the importance of e-government system development to public users and ensuring that they understand [its] targets…*

Participant PM2 mentioned one way of raising awareness in the public sector:

> *[The] people can be aware from government's websites, newspapers, social media (twitter, Facebook) and media awareness campaigns…*

There are in fact several researchers who have stressed the importance of awareness campaigns for e-government projects (Al-Ghaith, et al., 2010; Al-Azri, et al., 2010; Al-Omari, 2006; Al-Omsri et al., 2012; Choudrie, et al., 2005; Fang, 2002). Hence, it may be deduced that in the Saudi Arabian context, citizens' interest in e-government initiatives is low, due to the dearth of awareness-raising campaigns to enhance knowledge, and the lack of information and training for e-government adoption and development. These may be especially attributed to users' unfamiliarity with the existing e-government systems and the current level of e-government performance.

7.6.2 The Social Context: A Lack of Trust

There are individuals around the world who make a conscious choice to avoid using the Internet for specific or even all tasks, since they have various trust issues. This was one point made by the interviewees in the present study. Such Saudi users are constantly afraid that their personal information will be misused. The Saudi government must take

this issue into account, providing constant reassurance, especially for the older generation, that their information will be safe. For example, participant PM4 mentioned that:

> *…old people do not trust any new technologies; such as computer smart phones, they prefer to [go] and do their transactions by visiting the local authority…*

Moreover, participant PE16 explained:

> *…Saudis are really conservative people about giving personal details [and] health information and the Ministry has to adopt the right approach, in order to reduce users' concerns and create a trust relationship, so that the development of the e-government system can continue…*

In addition, Saudi female user has been introduced her personnel assigned to e-government trust participant PF1 added:

> *…It's still the e-services are secure for everyone, but users' trust still needs to be built up for a strong relationship between users and the Ministry.*

The governmental perspective confirm that Saudi citizens find more comfortable and save that use face to face transactions, participant PE2 stated:

> *The trust issue impacts on the development of [an] e-government system… We need to build trust with users by creating relationships between our employees and users in their use of online services…*

Trust and security concerns regarding e-government system adoption and implementation have therefore been stressed upon, and security and privacy mechanisms have been introduced by IT personnel assigned to Saudi Ministries. These mechanisms include password protection and biometric authentication equipment. A secure, reliable and trustworthy environment should be created through these efforts, drawing upon the existing literature in the field (Al-Khouri, 2012; Al-Ghaith, et al., 2010; Colesca, 2009; Al-Khouri and Bal, 2007). In addition, this insignificant relationship may be due to the government's inability to ensure the privacy of e-government users and an existing lack of trust. The majority of the respondents nevertheless stated that security and privacy policies were being developed for the planned e-government system.

7.6.3 The Social Context: City Size

The findings in Chapter Six (see section 6.6.3) indicate that only the larger branches of Saudi Arabia's Ministries have e-government systems, but reforms must also include Saudi Arabia's smaller cities, if e-government development is to succeed. It must be clearly understood by Ministry decision-makers that e-government development will take place across the entire Kingdom. At present, the smaller cities in Saudi Arabia offer fewer e-services. For example, Participant PM4 elaborated on this further;

> *Not all the services are provided in all cities, especially not e-services that require verification…*

Participant PE6 confirmed same concern that:

> *…in the main cities, the departments have the fundamental ICT tools and facilities…*

Consequently, the interviewees confirmed that the main cities in Saudi Arabia have extensive e-services at their local authorities, but large amounts of data to process and congested services due to the level of demand. This is the result of the large population in Saudi Arabia's main cities. However, the smaller cities suffer from less congestion. For example, participant PE9 clarified:

> *[In] the big cities, the Ministry departments (branches) deal with a large number of services, compared to small cities…*

Therefore, in relation to e-government development in Saudi Arabia, the decision-makers need to consider comprehensive e-government, which will cover the entire country. Moreover, Ministry decision-makers must concentrate on providing and maintaining long-term resources, as well as collaboration between the different cities and regions involved, and appropriate expertise in e-government development and e-government maintenance Moreover, participant PM5 declared:

> *Saudi Arabia is a large country in terms of its area and population and so we need to extend online services…*

IT senior manager PE14 also added:

> *We are facing a huge demand for e-services that support local authorities, especially in villages and smaller cities…*

The success of any e-government project will largely depend on bearing this essential aspect in mind, prior to Ministerial branch development. Decision-makers need to collaborate with the local authorities of other cities and this is in fact necessary for successful e-government development, which is supported in part by the current findings (see section 6.6.3). In addition to the literature, the findings support the notion that an e-government system requires good e-service provision in small cities and regions, equal to those in the main cities and this is established as a pre-condition (Aldhabaan, 2012). In conclusion, decision-makers must also be committed to the success of e-government in other geographical regions.

7.6.4 The Social Context: User Attitudes

User attitudes represent a major influential social factor, with significant impact on citizens and incomers alike. They are particularly significant in relation to Saudi Arabia's Ministries, especially those which have undergone rapid expansion, due to the presence or absence of personal relevance for users in relation to e-government. 'User attitude' in this sense is associated with an intention to use a system (Ajzen, 1989). In the current research findings (see Chapter Six, section 6.6.4), it is illustrated how user attitude influences the degree of e-government system use and this has a major bearing on e-government development. For example, participant PE9 stated:

> *…sometimes, users refuse to use new technologies [such as] an e-government system, for no other reason other than their personal perception of e-government…*

User attitude is therefore a critical factor that can influence e-government development in Saudi Arabia. Moreover, attitudes can impact on an entire e-system and consequently, this will relate to user satisfaction (Verdegem and Verleys, 2009). As identified in the present research findings, user attitude in Saudi Arabia can be quite particular, being rather rigid. For example, participant PE12 elaborated on this:

> *…to make sure the e-government system is developed successfully… we have to consider differences in user attitudes…*

From the user's perspective, the findings illustrate that a favourable attitude to e-government plays a significant role in its ease of implementation; for example, participant PF4 explained:

> *…In my personal experience, I prefer to use electronic services provided by the government. However, it has taken time to familiarise myself with how to use these e-services…*

Participant PF3 added:

> *I'm not [familiar] with electronic services and sometimes I need a little more time to be able to use the electronic services provided by Ministries…*

Overall, users' attitudes will interact psychologically and behaviourally at the level of e-system use. Therefore, decision-makers in Saudi Arabia's Ministries need to seriously consider the attitudes of Saudi users in the development process, in order to ensure successful e-government development. This will involve users' attitudes to ICT, whereby the social factor must be sustainable for a Saudi e-government programme. Special attention has consequently been given to users' attitudes to e-government projects, which have played an operative role in e-government development. In fact, previous and current e-government projects have proven to bring about an effective change in Saudi society and the interviewees described it as being a major motivator in terms of users' attitudes.

7.6.5 The Social Context: Familiarity with E-Service Usage

Alsaghier (2010) claims that actual experience in context will lead to familiarity with e-services, as well as providing an opportunity for the public to learn how to use them and thereby develop a perspective. This familiarity and confidence in using e-services will in turn engender trust (Luhmann, 1979). Luhmann (1988) confirms this, declaring that the public will place their trust in e-government, if they are familiar with it. Sometimes, governments can be more traditional than the general public in this regard. The point made in this thesis is that users become familiar with a facility or technology, when they become accustomed to it and learn how to use it. For example, participant (PM3) stated:

> *I know exactly what an e-government system is, but I need time to become familiar with using e-services. Sometimes, this can be tricky, especially with new or multifunctional e-services.*

Alsaghier (2010) conducted research to measure the level of trust placed in e-government by Saudi users, given that the majority of the Saudi population are unfamiliar with the e-government environment, which is basically the first stage of e-

government. In this thesis, the familiarity factor is determined, referring to the user's knowledge of using such services. Hence, a major obstacle for the user is familiarity with e-services, namely knowing how to use them. For example, participant PM5 admitted:

> *I'm not familiar with electronic services and sometimes I need a little more time to be able to use these electronic services provided by the Ministries…*

Moreover, participant PF1 acknowledged that

> *…many users have issues with becoming familiar with such IT systems and this is considered as a problem for the ordinary user, especially if we take older people into account…*

It became clear that users face problems related to their lack of familiarity with the use of e-services to meet their needs, such as dealing with government transactions via electronic means. This study identifies the need for familiarity with e-systems, involving the immersion of the user in new technologies. This is a factor that proved to have a significant influence on the use of e-services and several participants confirmed that they were unfamiliar with them and did not know how to use them. For instance, participant PF4 explained:

> *In my personal experience, I prefer to use electronic services provided by the government. However, it has taken time to familiarise myself with how to use these e-services…*

In the interviews conducted with Saudi citizens for this research, the participants were asked about their experiences and their familiarity with using e-government systems. It was evident that familiarity with such systems was associated with the users' trust and experience and that familiarity exerts a positive influence on the adoption and development of e-government. It is therefore an element that could promote the use of e-government, especially as some of the users perceived e-services as useful, such as participant PM3:

> *…the government is seeking to make citizens' transactions easier through the provision and adoption of new electronic services for citizens' transactions within Ministries and government institutions, as well as familiarising Saudis with these (services).*

Moreover, participant PM2 declared:

Familiarity with using the applications and government websites is required. Without this, it will be difficult.

Conversely, a user's lack of familiarity with e-services will negatively influence usage and this will in turn hinder the adoption and development of e-government, given the importance of the user in this process. It is a phenomenon linked with Internet use in general, the accessibility of Ministries, and the perceived ease of use of Ministry websites. As an illustration, participant PM5 explained:

I'm not familiar with electronic services and sometimes I need a little more time to be able to use these electronic services provided by the Ministries…

In conclusion, familiarity with e-government appears to represent a significant element, shaping users' perceptions and usage habits. It therefore has the potential to either positively or negatively influence the use of e-government services.

7.6.6 The Social Context: Availability of E-Services

Al-Sobhi and Weerakkody (2010) conducted a study on Saudi users in Medina, an important city in Saudi Arabia and identified three conditions bearing upon public uptake of e-government websites and the Internet in general: usability, availability and accessibility. The absence of these preconditions was found to impede e-government adoption and usage. The research findings in this current study also reveal that the availability of e-services is a significant requirement of the general public, with participant PM3 declaring:

When I check online to find out how I can apply for any of the services that I need, the main issue is whether or not they are available. When the service is available electronically, then that is really beneficial.

Layne and Lee (2001) have further defined the perceived availability of e-services as being 24 hours a day, every day of the week, in order to fully satisfy users' requirements. In addition, these services need to be available right across government bodies, because, as mentioned by participant PM1:

…not all the Ministries provide their services electronically…

Aside from this, women in Saudi Arabia have particular needs with regard to e-services, given the conservative nature of Saudi society. One female participant (PF2) claimed:

There are fewer e-services for female users… with requests to attend the local government office…

In addition, the development of e-government services is hindered by a lack of technology to support their availability (Criado et al., 2003; Al-Sobhi and Weerakkody, 2010). Section 6.6.6 discusses in greater detail the need for e-services in the public sector and examines the determining influence of the intention to use e-government services.

7.6.7 The Social Context: The Actual Beneficiaries of E-Government Services

In terms of the benefits of e-services, the Literature Review in the present study revealed the extensive advantages of e-government. Moreover, several studies specified the distinct benefits of e-government for various groups and highlighted them (for example, Beynon-Davies, 2005). Also identified are the benefits of e-government for users, drawing upon the participants' interview responses and deducing that it is these benefits for the user, which will significantly enhance e-government adoption. For example, participant PF4 explained:

I believe that the benefit of the electronic services provided by the government is that they make life easier for citizens…

While participant PM3 also raised the point:

...when services are available electronically, then that is really beneficial.

The Literature Review in the present study brought to the fore many economic benefits of e-government and thus the need for the public to be made aware of the potential financial advantages of such services for both the nation and the individual (Lau, 2005). Moreover, the findings presented in Chapter Six, section 6.6.7 point to ways in which some users had fully realised the benefits of e-government, such as participant PM5, who stated:

I like to perform my transactions via the electronic system; it is really beneficial for saving time and effort…

Furthermore, participant PM1 expressed the desire to see all services being provided electronically to meet users' demands:

> *[It would] be beneficial if the government made every single service available electronically, instead of us having to go to government offices or visit government Ministries in person…*

This supports Alghamdi, Goodwin, and Rampersad (2014), who also describe the advantages of an e-government portal.

In conclusion, the participants in this study highlighted the benefits of e-services for the user, citing a positive influence on e-government system development.

7.6.8 The Social Context: Extending E-Government Services

There is a crucial demand for extensive e-services in Saudi Arabia, via an online portal for the purpose of expanding government services. This would enable government bodies to extend their services via electronic means and thereby meet users' requirements. In fact, e-services offer benefits across all sectors, whether public, business or governmental and can even facilitate internal functions, such as between management and employees (Alghamdi, Goodwin and Rampersad, 2014). This current research has further indicated the need for e-service provision, especially at government level. For example, participant PM3 stated:

> *…some of the Ministries launch a new electronic service every day to extend their services, but there is still a need for more e-services.*

This was then echoed by participant PF2:

> *There has been a huge improvement in the e-government system within several Ministries. However, I think more electronic services are required especially for women's transactions.*

In reference to the extension of e-government services, it becomes clear that this is a factor influencing users' intention to use such services, which in turn has a significant impact on the development process. It is therefore essential for decision-makers to account for the user's perspective, when planning the development process. Moreover, it is a further factor indicating both the huge demand for e-services, and what is required to facilitate the implementation and then adoption of those services.

7.7 Summary

In this chapter, the key aspects of the research were discussed. The critical factors for the development of an e-government system were cited, with proposals for formulating a conceptual framework in the Saudi Arabian context. This chapter has also described the data collected in the research context, which will subsequently be used to create the conceptual framework see (Figure 8. 1). In this phase, semi-structured interviews were carried out at four Ministries in Saudi Arabia and amongst potential e-service users selected from the general public. The main findings of this research were defined as critical factors and sub-factors, which emerged to form part of the design for the intended conceptual framework.

Comparisons were therefore made with the relevant existing literature, whereby critical factors were identified, namely the technological, organisational, environmental and social factors relevant to Saudi Arabia, as well as their degree of importance. The thematic analysis conducted using the data gathered in the present research corroborated these points, thus demonstrating that the Literature Review and the descriptive data collected presented no anomalies in this regard. Moreover, several characteristics were highlighted as unique to e-government development in Saudi Arabia, consequently requiring special attention.

A combination of critical factors were subsequently indicated as relevant for consideration here and the issues arising at Ministerial level in Saudi Arabia were well supported by the data analysis, along with the interplay between the four contexts identified. Both the Literature Review and the data analysis strongly suggest that these issues need to be effectively managed, in order to develop, improve, promote and facilitate the development of a successful e-government system in Saudi Arabia. They were explored for the purpose of establishing ways in which the Saudi context could be supported in these efforts. The ensuing conceptual framework presented in this research is intended to enable this process. In the next chapter, this conceptual framework is designed and explained, outlining its functions, underlying concepts and requirements. It is also related to the current research findings and the Literature Review in this thesis.

Chapter 8: Formulation of the Conceptual Framework for E-Government

8.1 Introduction to the Conceptual Framework

In chapter seven, the research findings were discussed and an understanding was formed of the critical factors derived from the TOE Framework (see Chapter, Four section 4.2 and Figure 4.1), together with the social context influencing e-government development in Saudi Arabia. Consequently, the critical factors of this research topic were identified to be able to construct the framework for enhancing and developing an e-government system in the Saudi context. This chapter will now explain this conceptual framework in depth, as well as justifying the need for it, describing the way in which it is formulated, and defining its concepts and application. Finally, this chapter will summarise the research findings and compare them with the existing literature reviewed for this study (see Table 8.1).

8.2 The Critical Factors Influencing E-Government Development, as Derived from the TOE Framework

Chapter seven presented the discussion of the data collected for this thesis, so that the critical factors for the development and adoption of e-government in Saudi Arabia could be identified. It was consequently ascertained whether these had a positive or negative effect on the development and adoption of an e-government system, or if they were required for its implementation, or indeed if they impeded this process. The following sections discuss and highlight the key findings in relation to these critical factors.

8.2.1 Critical Factors: The Technology Context

The technology context revealed several important factors of influence bearing upon the development of e-government. The first of these is ICT infrastructure, which is presented in Chapter Six, section 6.3.1. This was identified as a required element for e-government development. In addition, three sub-factors were derived from this: the presence of a portal (e-system), network infrastructure and applications. As a result, this factor and its sub-factors proved to have a direct influence on the adoption and development of e-government in relation to Saudi's government Ministries (see also Table 6.1 and Chapter Seven, sections 7.3.1-7.3.1.3).

The second factor identified in the technology context was ICT strategy (see also Chapter Six, section 6.3.2), in which three sub-factors are embedded, namely vision, planning and funding. These were also identified as being required for the development of e-government.

The third factor highlighted in this context was the presence of an integration system, involving a single electronic system for all government bodies. An integration system links components of e-government, such as databases, communication channels and transactions. Therefore, it helps the government to control and manage all activities taking place in its e-system. Chapter Seven discusses this aspect in more depth and detail, alongside a review of the literature (see also Chapter Eight, Table 8.1).

8.2.2 Critical Factors: Organisational Context

The organisational context also gave rise to a set of sub-factors impacting on e-government development and adoption. These consisted of senior management, organisational attitudes, data-sharing and change management. Change management was further sub-divided into two tertiary factors that facilitate the ongoing change management process: BPR and staff training (see also Chapter Six, sections 6.4-6.4.4.2 for an in-depth analysis and Chapter Seven, sections 7.4-7.4.4.2 for further discussion in relation to the Literature Review).

All elements relating to the organisational context were subsequently identified and related to the literature on Saudi e-government, as presented in Chapters Two and Three. A summary of the findings may be found in Table 8.1.

8.2.3 Critical Factors: The Environmental Context

From the findings of this thesis, the environmental context proved to have the least impact on e-government development and adoption, with just two sub-factors emerging: policies and rules, and the surrounding culture. The latter was found to have a significant influence on e-government implementation. In Chapter Two, this thesis presents a wide review of the relevant literature linked to global e-government adoption, development, implementation and diffusion, in order to determine the critical factors influencing e-government, as derived from the environmental context (see also Chapter

Four, sections 4.6-4.6.2). In terms of identifying this context, with particular reference to Saudi e-government and the Literature Review in this study, Chapter Six (sections 6.5-6.5.2) especially clarifies the sub-factors of policy and rules, and the cultural environment in relation to e-government adoption and development (for example, see Table 6.1). It is also related to the current findings on the environmental context and the Literature Review (see Chapter Seven, sections 7.5-7.5.2).

8.2.4 Critical Factors: The Social Context

Data for the social context was gathered at two levels: first, from senior IT senior staff employed at the Saudi Ministries being studied, and second, from members of the Saudi public. This was in order to ascertain their levels of awareness of the existence, nature and benefits of e-government. Also examined were factors such as a lack of trust, city size and user attitudes. This was then followed by an exploration of the social context, identifying the factors considered critical to the success of e-government from the point of view of the user. These included familiarity with using e-services, the availability of e-services, the actual beneficiaries of e-government, and the extent of e-government. In Chapter Three, a substantial body of literature was presented on the social context and instances of success or failure based on the social perspective. Here, research approaches were also examined, weighing up the advantages of quantitative and qualitative data, with their suitability for various types of study. More specifically, in Chapter four (section 4.7), this thesis reviewed materials referring to social factors.

As mentioned earlier, the present researcher collected the research data on two levels: from IT personnel working at government Ministries and e-service users drawn from the general population. These data are analysed in Chapter Six (Table 6.1) and then in more detail in sections 6.6-6.6.8. In addition, the research findings were linked with the literature in Chapter Seven (sections 7.6-7.6.8). These findings and their relationship with the relevant literature are summarised in Table 8.1 to clarify the situation in the Saudi context.

8.3 The Need for an E-Government Framework in Saudi Arabia

Previous researchers have identified a significant demand for e-government adoption and development in Saudi Arabia and as such, have pointed to the need for a conceptual

framework based on existing theory, in order to enhance and facilitate the development and adoption of e-government in many dimensions (such as, Al-Fakhri et al., 2008; AlSobhi et al., 2009; Alsaghier, 2010; Alshehri et al., 2012; Aldhabaan, 2012; Alateyah et al., 2013; Alsaif, 2013; Alomari et al., 2014; Alghamdi, 2014; Albesher, 2016). Here, it becomes clear that the sole and decisive goal of e-government development is not merely to obtain and provide information; it is also to encourage frequent usage of e-services by the general public, business sector, government bodies and government employees. Moreover, throughout these sectors and organisms and as from launching e-government as a service delivery method around the world, there has been a prolonged struggle to discover the key critical factors affecting its development. However, it is clear that in order to be able to distribute e-government, the gap between implementation by government bodies and the efforts of government service providers to facilitate this implementation has been a matter of concern for decision-makers. Consequently, in order to determine the success of e-government, the factors of 'know-how' affecting the development of this new framework must be identified and accessed. In order to be able to investigate the topic of e-government, a conceptual framework is thus designed and proposed in this thesis, while attempting to address some of the deficiencies in existing e-government, so that benefits can be assured for users; businesses; government bodies, and the government employees responsible for the management and provision of e-government. Therefore, measures of success need to be developed, through which the benefits of e-government can be effectively captured.

8.4 Formulation of a Conceptual Framework Based on the TOE Framework

The conceptual framework designed and constructed in this study according to the TOE Framework incorporates three contexts: technology, the organisation and the environment. The resulting framework is intended for use in government, private and public sectors in Saudi Arabia. This chapter will therefore outline how Saudi decision-makers could use this framework in the government's Saudi Vision 2030 (see Chapter Two, sections 2.3 and 2.3.1). In the process of formulating the framework, the present researcher will describe how specific critical factors can help determine the issues potentially hindering e-government development. In addition, it will be clarified how this framework should work in providing guidance for decision-makers in Saudi Arabia

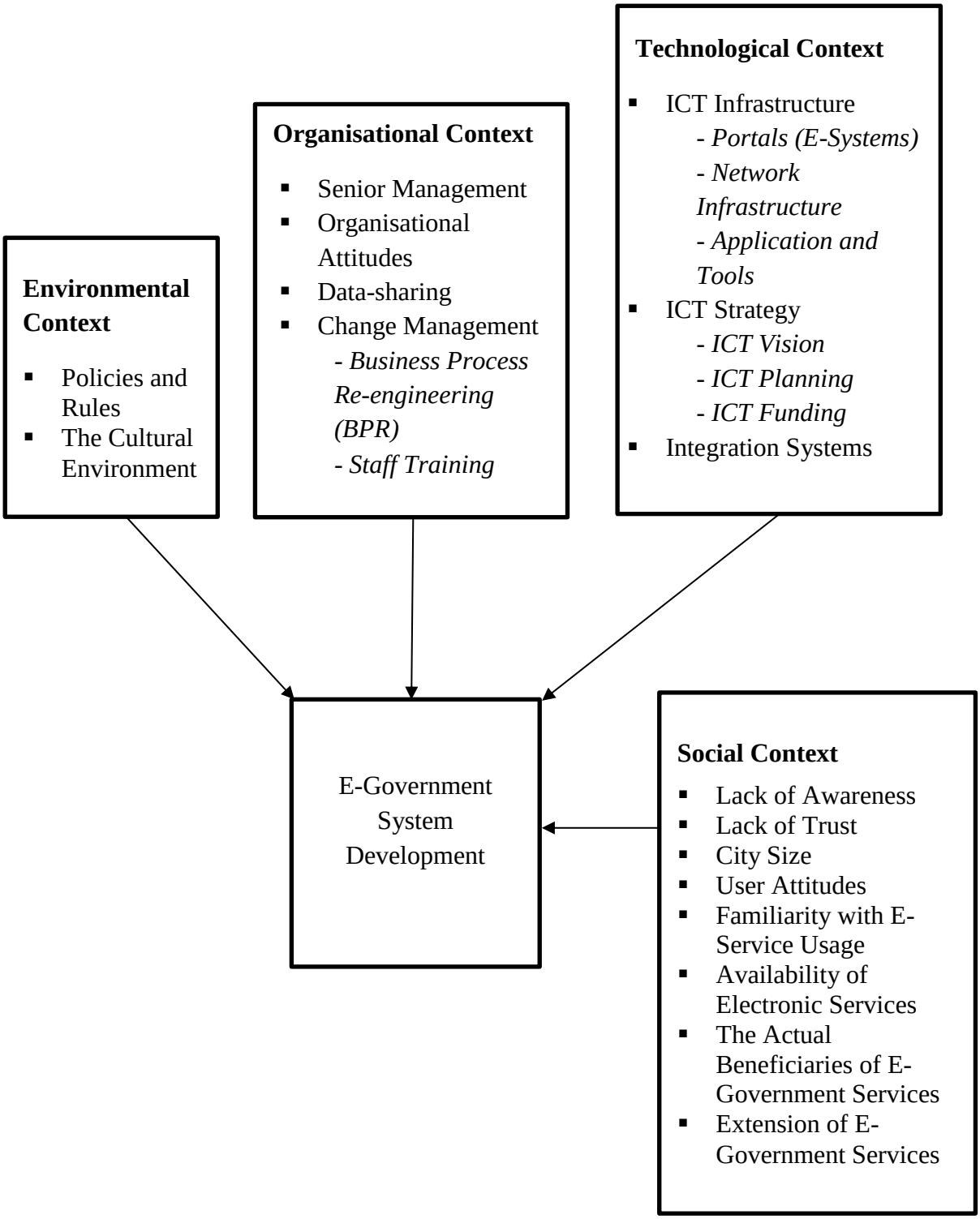

Figure 8.1: The conceptual framework formulated for use in Saudi e-government

8.5 Concepts Underpinning the Framework for E-Government System Development

In order to discover the critical factors of e-government development in Saudi Arabia, a conceptual framework is recommended here, based on the present discussion. As already explained, a practical illustration of this framework reveals four main factors of influence: technological, organisational, environmental and social. This is in addition to the characteristics of 25 higher-level aspects (see Figure 8.1).

The use of e-services by the general public is represented in terms of access. Theoretically, complex processes are simplified into stages as matters of innovation. Moreover, compared to static models, this framework is helpful for providing a more effective and concise description of the authenticity of innovative decision-making (Wheelen and Hunger, 2002; Layne and Lee, 2001). Additionally, the key TOE contexts plotted in this conceptual framework are supported by it and further corroborated by earlier theories on the establishment of e-government, specifically institutional theory. However, the challenges faced by e-government and development-related factors are also reflected in this conceptual model and it is in relation to the acceptance of these services that we can determine the success of any e-government development.

8.6 How the Conceptual Framework Works

The proposed design for the conceptual framework is intended to facilitate the development of an e-government system in Saudi Arabia, as a means of assisting in matters of government (decision-making), especially with regard to the country's overall development process (SAUDI Vision 2030). In this research, the framework is applied to current e-government system design to help review the existing priorities in Saudi's development strategy. This is of significance in the context of a developing country, such as Saudi Arabia, where the e-government systems present at Ministerial level are generally still in their review and development stages. Moreover, there are many issues and gaps in the national e-government strategy. This framework has therefore been designed to highlight the critical factors influencing e-government development and to begin with, four phases of development are mapped out, as described as followed:

Phase One: This involves studying and reviewing the current e-government scenario and identifying the challenges, obstacles and critical factors influencing the e-government development process.

Phase Two: Here, the conceptual framework is implemented in relation to the main critical factors (see Figure 8.1 and Table 8.1).

Phase Three: In this phase, suitable action is taken to raise public awareness of e-government services and how such systems can be accessed.

Phase Four: Finally, suitable steps are taken within the government (amongst government bodies) towards the future vision for development in technological, organisational, environmental and social contexts.

In consideration of the need for an effective conceptual framework to guide effective e-government development, the Saudi government needs to sustain its drive forward and award close and special attention to this area of development. In fact, some government officials recognise its importance and are in favour of current initiatives of this nature being consistently maintained, even if they appear rather cautious in their approach to e-government. Nevertheless, due emphasis must be placed on e-government development and related management structures on a wider scale, in order to ensure the sustainability of e-government development. A more serious consideration of these advancements, along with a thorough study of their possibilities and implications, would contribute a great deal to the ongoing and effective progress of the conceptual framework and e-government enhancement (see Figure 8.1).

Table 8.1 illustrates the factors identified in relation to e-government development, derived from research results gathered from several Ministries in Saudi Arabia, which were subsequently analysed and coded, as shown earlier. Therefore, the present researcher identified the key factors to be considered when designing a conceptual framework, in order to help decision-makers at Saudi Ministries gain a deeper understanding, thus facilitating the development process, especially where critical factors are involved.

8.7 The Research Findings in Relation to the Literature Review

This section presents the contribution of this current research by comparing its findings with the previous literature, as reviewed in this study and in the context of e-government development in Saudi Arabia (see Table 8.1).

Table 8.1: The critical factors found in existing research and the current study findings

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
Technological Factors	Al-Shehry (2008) identifies technological issues as playing a key role in influencing the adoption of e-government at national level. Also indicated in the above are the sub-factors of ICT infrastructure, security, the E-payment Gateway, and IT standards at government Ministries.	The present study identifies the technological factors (see Chapter Six, section 6.3) of e-government adoption from findings gathered from senior IT managers within four selected Saudi Arabian Ministries (see Chapter Five, section 5.9). The technological factors in these findings also produced three sub-factors, which directly influence e-government development in the Saudi context: ICT infrastructure (6.3.1) ICT strategy (6.3.2)	The findings from previous research have been limited to technological factors in organisations and how these affect e-government adoption in the public and private sectors. However, the present research identifies a wide range of technological factors and sub-factors (see sections 7.3, 7.3.1, 7.3.2 and 7.3.3). These were found to include three key factors, each leading to sub-factors potentially associated with e-government development: 1- ICT infrastructure, generating three sub-

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
		The integration system (6.3.3)	factors: the e-system (portal), network infrastructure, and applications and tools 2- ICT strategy, including three sub-factors: ICT vision, ICT planning and ICT funding. 3- The integration system
ICT Infrastructure	Al-Shehry (2008) highlights the importance of ICT infrastructure, as provided by the Saudi Telecom Company and emphasising the need for a robust telecommunications infrastructure. Meanwhile, Alshehri (2012) pinpoints poor ICT infrastructure as a barrier to the acceptance of e-government adoption. In fact, ICT infrastructure is revealed as essential for e-government implementation.	The present research identifies ICT infrastructure as an important factor influencing e-government development. Here, ICT infrastructure refers to all information and communication technology tools, such as portals, networks and applications. Three sub-factors were subsequently derived for ICT infrastructure, namely: 1- The e-system (portal) in section 6.3.1.1; 2 - The network in section 6.3.1.2, and 3- Applications and tools in section 6.3.1.3.	Previous findings state that the ICT infrastructure provided by the telecommunications industry has assisted with the adoption of e-government. On the other hand, this current research investigates ICT infrastructure and its impact on e-government development in Saudi Arabia's Ministries and especially looks at the ICT tools that facilitate e-government implementation and integration in those Ministries (see section 7.3.1). Three elements of ICT infrastructure were consequently identified, which could help

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
			enhance the ICT infrastructure: the e-system (portal)], the network infrastructure, and applications and tools (see sections 7.3.1.1, 7.3.1.2 and 7.3.1.3).
National Portal (e-system)	Not found in the Saudi context	The present research identified the portal (e-system) as one of the most important sub-factors influencing e-government development. The portal forms part of the ICT infrastructure, which is a key element of e-government development in Saudi Arabia's Ministries (see Chapter Six, section 6.3.1.1).	The present study covers a wide range of e-government elements, such as ICT infrastructure. This includes the portal, which is a sub-factor to be considered in e-government development, in order to ensure high efficiency (see section 7.3.1.1). Moreover, the conceptual framework points to great demand for a portal and the study participants agreed on this point. However, the portal is not just necessary for creating a G2C e-system for individual Ministries, but rather pertains to a vast e-system, consisting of all government bodies, government employees and citizens, including the

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
			business sector.
Network Infrastructure	Altameem (2007) mentions the network as an element of IT infrastructure that influences the adoption of e-government.	The present research has investigated a huge knowledge gap in terms of e-government and ICT, and the factors potentially enhancing e-government adoption. This was achieved by examining previous research on network needs, such as the adoption of e-government. However, the existing ICT may be inadequate for e-government development in the Saudi context and so Saudi Arabia's Ministries need to invest heavily in specific network infrastructure, as part of this development process. Without a high level of network performance, efficient e-services cannot be delivered (see section 6.3.1.2).	The network infrastructure in Saudi Arabia's Ministries requires more extensive development to meet the necessary standard in all local authorities, so as to ensure that there is appropriate ICT infrastructure for enhancing e-government adoption and development. Network infrastructure is one of the main elements directly affecting e-government in such electronic processes (see section 7.3.1.2). Strong networks are required in G2G, G2C, G2B and G2E transactions.

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
Applications and Tools	Al-Fakhri et al. (2008) identifies the challenges facing e-government implementation in the public sector; indicating the gap between government agencies and the private sector in the use of applications and technologies within e-service implementation.	The present research reveals that the applications and tools used for e-services should be efficient, in order to ensure a high level of performance in e-government adoption. In the light of this, applications need to be improved, so that they can effectively deliver e-government services (see section 6.3.1.3)	Previous research has identified the absence of applications in use amongst government agencies and the private sector alike. However, the participants in the present study emphasised the need for greater use of new applications in e-government adoption among Saudi Arabia's Ministries and government bodies, and for these to be of the required standard. The applications used in e-government need to be designed to support its development (see section 7.3.1.3).
ICT strategy	Alshehri (2012) points to the lack of strategy, planning and vision in long-term projects for e-government adoption. Similarly, Al-Shehry (2008) explores and emphasises the need for strategy in the adoption of e-	The present research derived the sub-factor of ICT strategy from the technology factor (see section 6.3.2). In turn, ICT strategy is seen as an important factor of e-government development. This finding covers a wide range of ICT	Previous research has been limited to identifying strategies for e-government projects. In fact, comprehensive development has been sought for such e-systems and other ICT projects relating to e-government development. Moreover, the

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
	government.	strategies, which include three important sub-factors: 1- ICT vision (section 6.3.2.1), 2- ICT planning (section 6.3.2.2), and 3- ICT funding (section 6.3.2.3).	need to consider an ICT strategy that includes technological projects has been pinpointed. Meanwhile, the present research also deduced from the responses of senior IT professionals at Saudi Ministries that ICT strategy is an important factor of e-government development and adoption. Three important sub-factors were subsequently identified for consideration when agreeing on an ICT strategy: vision, planning and funding (see sections 7.3.2.1, 7.3.2.2 and 7.3.2.3).
Vision	Altameem (2007) and Alshehri (2012) discuss the lack of strategy, planning and vision for long-term e-government projects to promote e-government adoption.	ICT vision for e-government development was derived from ICT strategy. ICT vision enhances all further ICT projects, whether or not they relate to e-government (see section 6.3.2.1). In	The findings from previous research reveal a lack of vision in e-government projects. This especially relates to ICT vision in comprehensive ICT projects involving new technologies.

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
		fact, there is great need for vision in Saudi Arabia. Hence, the Saudi government, headed by Prince Mohammed Bin Salman has initiated the national development plan, Saudi Vision 2030 (see Chapter Two, sections 2.3 and 2.3.1).	However, in the present research, ICT vision was found to enhance e-government adoption and development (see section 7.3.2.1). Prince Mohammed Bin Salman's Saudi Vision 2030 addresses important areas of the country's development, including boosting the national economy. This Vision has a broad agenda and includes a vision for e-government and e-services (see sections 2.3 and 2.3.1).
Planning	Altameem (2007) and Alshehri (2012) discuss the lack of strategy, planning and vision for long-term projects to promote e-government adoption.	From ICT strategy was derived ICT planning for the needs of ICT in e-government adoption and development. ICT planning will enhance all further ICT projects, which may or may not relate to e-government (see section 6.3.2.2).	Previous research findings have identified a lack of planning in e-government projects. On the other hand, the present research has identified the necessity for ICT planning within comprehensive ICT projects relating to new technologies. ICT planning has in fact been found to directly enhance the development of e-government services (see

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
			section 7.3.2.2).
Funding	Altameem (2007) identifies the need for funding in long-term e-government projects to promote e-government adoption.	The present research identifies ICT funding as one of the sub-factors enhancing ICT strategy. In fact, the funding for ICT or e-government projects is deemed to be the key to a successful e-Government development process (see section 6.3.2.3).	Previous research has identified the need for funding in e-government adoption. Meanwhile, the present research identifies and discusses the influence of funding for ICT projects pertaining to e-government development and implementation. The study participants discussed the need to fund such ICT projects, including the necessity for project mentoring (see section 7.3.2.3).
Integration and Connectivity	Not found in the Saudi context	The present research identifies integration and connectivity from amongst the technological factors, with particular attention to Saudi Arabia's Ministries. In fact, there has been no integration or connectivity between Ministries and local authorities for some	The present study participants identified a lack of integration and connectivity among Saudi Arabia's Ministries. Some participants highlighted the absence of connectivity between several local authorities and the main Ministries. They declared that successful e-government

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
		time (see section 6.3.3).	development could not be brought about without establishing satisfactory connectivity and integration within an e-system. For successful e-government development, Saudi Arabia's Ministries therefore need to consider creating a robust system of integration and connectivity between all government bodies (see section 7.3.3).
Organisational Context	Al-Shehry (2008) and Altameem (2007) identify organisational factors by including several sub-factors relating to organisations. Furthermore, Al-Shehry (2008) identifies organisational issues as the key influences on the adoption of e-government at national level, indicating e-government strategy, e-	The present research findings reveal important organisational factors identified from responses provided by senior IT managers within Saudi Ministries. These factors were considered to have a huge influence on e-government adoption, implementation and development (see section 6.4). The following four factors were subsequently	Previous researchers have identified several factors influencing the adoption of e-government. However, the present research highlights the need to identify those organisational factors that directly influence e-government development and which will specifically help Saudi Arabia's decision-makers to enhance, improve and develop their e-

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
	law, relative advantages, political support, and e-government entities. Altameem (2007) also classifies organisational factors as key issues influencing the adoption of e-government at national level and highlights change management, training, implementation, quality, organisational culture, technical staff, policy, legal issues, reward systems, BPR, awareness and organisational structure.	isolated: Senior management (see section 6.4.1) Organisational attitudes (see section 6.4.2) Data-sharing (see section 6.4.3) Change management (see section 6.4.4).	services to satisfy users' needs. Moreover, e-service quality should be enhanced to deliver adequate services. The present research highlights the vital role of organisational factors in such a development process and this was supported by the interviewees (see section 7.4). From these research findings, four important factors were isolated that can positively influence e-government development. These factors consist of senior management (see section 7.4.1), organisational attitudes (see section 7.4.2), data-sharing (see section 7.4.3) and change management (see section 7.4.4).
Senior Management	Not found in the Saudi context	The present research identifies the factor of senior management as influencing e-government adoption and development (see section 6.4.1).	The interviewees in the present study emphasised the importance of the role of senior management for the development of e-government and were unanimous in citing

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
			it as a key factor of influence. Support from senior management therefore needs to be enlisted to ensure effective e-government development (see section 7.4.1).
Organisational Attitudes	Not found in the Saudi context	The present research identified organisational attitudes amongst the participants, which clarified that each organisation (Ministry or department) had different attitudes that could influence e-government development (see section 6.4.2).	The present research identifies organisational attitudes as a vital factor influencing e-government development and holds that the latter needs to be nurtured by appropriate and beneficial organisational attitudes (see section 7.4.2).
Data-sharing among Government Organisations	Altameem (2007) identifies information-sharing as an aspect of IT infrastructure that needs to be considered in e-government adoption. Meanwhile, Al-Shehry (2008) points out that data-sharing is an organisational issue influencing e-	The present research identifies the data-sharing sub-factor as an important critical factor for organisations; directly influencing the adoption and development of e-government. Moreover, this research explains that the matter of data-sharing should be taken into account	Previous research has identified the same effect of data-sharing as was revealed in the present study. Moreover, the current participants clarified the need for data-sharing with, within and between Ministries to facilitate e-government development. The participants also suggested several solutions

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
	government adoption at agency level. This factor is also highlighted in terms of data-sharing between government agencies at agency level.	by decision-makers (see section 6.4.3).	to alleviate concerns over data-sharing (see section 7.4.3).
Change Management	Al-Fakhri et al. (2008) reveal that top management resist change in organisational management. Al-Shehry (2008) also identifies change management as an important key to e-government adoption at organisational level, citing the lack of change management skills at Saudi's Ministries and in the public sector. Moreover, Altameem (2007) pinpoints change management as one of the factors influencing e-government in Saudi Arabia and a challenge facing managers in	The present research identifies change management as an organisational factor influencing the development and adoption of e-government and consequently states that it needs to be considered by decision-makers in Saudi Arabia (see section 6.4.4). This research also derived two sub-factors influencing change management: 1- Business process re-engineering (BPR) (see section 6.4.4.1) and 2- Staff training (see section 6.4.4.2).	Previous research has covered the need for change management within e-government adoption in Saudi Arabia. However, the present research explains the need for change in the administration of Saudi Arabia's Ministries. Moreover, the participants identified two critical factors of change management to ensure successful implementation: BPR and staff training (see sections 7.4.4.1 and 7.4.4.2). Also clarified in greater depth is the need for change management with regard to development and adoption of e-government (see section 7.4.4).

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
	organisations. Finally, Alfarraj (2013) concludes that change management is important for development processes in work environments.		
Business Process Re-engineering (BPR)	Altameem (2007) identifies BPR from key organisational factors influencing the adoption of e-government systems. He explains the need for BPR in the Saudi public sector and recommends a strategic framework for BPR implementation. Similarly, Al-Shehry (2008) identifies BPR as a factor to be applied to organisational issues at agency level, clarifying that bureaucratic producers in the Saudi public sector actually hinder the successful adoption of e-government.	The present research identifies the need for BPR at the level of Saudi Arabia's Ministries, in order to improve change management with regard to the development and adoption of e-government. This research also acknowledges the advantage of implementing BPR in Saudi Ministries (see section 6.4.4.1).	In previous research, BPR has been explained in terms of e-government adoption and the public sector. However, the present research discusses the importance of BPR at government Ministry level. BPR is thereby held to be a factor which can increase productivity in an organisation and the Saudi government is therefore encouraged to adopt BPR procedures. In addition, the interviewees suggested that the process be carefully planned, controlled and monitored to achieve efficiency (see section 7.4.4.1).

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
Staff Training	Many researchers have studied the issue of a lack of training in e-government adoption, such as Al-Fakhri et al. (2008), who identifies a dearth of employee training programmes in computer and Internet use. Altameem (2007) and Al-Sobhi et al. (2010) also highlight the lack of essential training in organisations. Finally, Alfarraj (2013) points to the lack of training for employees and the need for investment in such training.	The present research identifies the lack of staff training for the purpose of developing and adopting e-government. Such training would ensure a satisfactory development process. This research moreover identifies the need for staff training across all Ministry personnel, as the staff-training factor is one of the two most important factors of success in the change management process (see section 6.4.4.2).	Previous research has extensively covered the issue of a lack of essential employee training. On the other hand, the present research identifies different ways in which staff training can influence change management in the process of developing e-government. In fact, it identifies staff training as a sub-factor of change management. For sustainable change management, according to the interviewees in the present research, this is essential. Furthermore, the current research findings provide insights into trainees and their programme teams, with proper feedback being given on the success, failure and levels of satisfaction/dissatisfaction with such training programmes (see section 7.4.4.2).

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
Environmental Factors	Bakry (2004) describes the environment as encompassing economic, cultural, regulatory and political characteristics relevant to e-government.	The present research identifies the environmental factor as vital for the development and adoption of e-government (see section 6.5). However, this environmental context has rarely been mentioned in the existing literature, compared to the technological, organisational and social context. Here, the factors influencing the working environment at Saudi's Ministries are described, including policies and rules (see section 6.5.1) and the cultural environment (see section 6.5.2).	Previous research has identified the importance of environmental factors for fostering e-government. Additionally, the present research identifies the influence of environmental factors on the development and adoption of e-government (see section 7.5). The two main sub-factors derived relate to the Saudi Ministries themselves, with the need for a regulatory framework and emphasis on policies and rules, as well as consideration for the cultural environment (see sections 7.5.1 and 7.5.2).
Policies and Rules	Not found in the Saudi context	The present research identifies the vital role of policies and rules for e-government development and the adoption process within Saudi Arabia's Ministries (see section 6.5.1). This factor	The present research identifies policies and rules for the development and adoption of e-government. Moreover, this factor helps to resolve highly complex problems, since a great deal of administration is centralised.

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
		was identified from the environmental factors in the workplace.	However, it could be restructured to make it more efficient. In Saudi Arabia, policies and rules are highly significant for boosting the advancement of e-government system projects; they can help open the door of opportunity to greater development and progress in e-government (see section 7.5.1).
The Cultural Environment	Not found in the Saudi context	The present research identifies significant factors involving the cultural differences that influence the development and adoption of e-government in Saudi Arabia. These play an active role in environmental factors overall (see section 6.5.2).	The present research identifies Saudi workplace culture as peculiar, but also rich in the way e-government systems develop. These peculiarities should therefore be taken into consideration during the process of developing and adopting e-government (see section 7.5.2).
Social Factors	Many researchers, such as AlSobhi et al. (2009), Alshehri et al. (2012), Alateyah et al. (2013), Alsaif (2013) and Albesher (2016) have studied the	The present research identifies four factors that could impact comprehensive e-government development in the Saudi context, namely awareness (see section	Previous research findings have been focused on specific factors, as outlined above.

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
	various social factors involved in e-government adoption, such as citizens' acceptance of e-government.	6.6.1), trust (see section 6.6.2), city size (see section 6.6.3), user attitudes (see section 6.6.4), familiarity with the use of e-services (see section 6.6.5), availability of e-services (see section 6.6.6), the actual beneficiaries of e-government services (see section 6.6.7), and the extension of e-government services (see section 6.6.8). These social factors are also crucial for determining the impact of e-government in Saudi Arabia, due to their unique features (see section 6.6).	However, the findings from the present research also reveal additional social issues to be addressed and resolved, in order to enable successful and sustained development and adoption of e-government. Aspects of these issues are highlighted and discussed from the perspective of the interviewees in the present study. Consequently, a requirement for additional and closer communication between the various social factors associated with the development and adoption of e-government became apparent (see section 7.6). Social challenges emerge as key aspects of e-government development and adoption in the Saudi context. These comprise a lack of awareness (see section 7.6.1), a lack of trust (see section 7.6.2), city size (see section

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
			7.6.3) and user attitudes (see section 7.6.4).
Lack of Awareness	Many researchers, such as Altameem (2007), AlSobhi et al. (2009), Alshehri et al. (2012), Alsaif (2013) and Albesher (2016) have identified that a lack of awareness is a matter of concern for the adoption of e-government in Saudi's public sector. Alfarraj (2013) highlights this lack of awareness as the factor influencing e-government adoption at the level of the Yesser development team.	The present research findings reveal significant issues concerning low awareness of online systems and processes, especially in relation to how e-government systems are developed and implemented nationally. Therefore, in this study, it was found that Saudi users need to be made aware of the availability of e-systems and various ways and means of implementing e-government (see section 6.6.1).	In previous research, the lack of public awareness was identified. On the other hand, the present research adds various concerns expressed by senior IT managers at Saudi Ministries. It also discusses the lack of awareness amongst decision-makers within Saudi Ministries (see section 7.6.1).
Lack of Trust	Many previous researchers have studied the lack of trust inherent in Saudi's social acceptance (for example, Altameem, 2007; AlSobhi et al., 2009; Alshehri et al., 2012;	The present research findings pertaining to a lack of trust are examined here and these represent a major challenge, as recognised by the interviewees drawn from various Saudi Ministries and from	As mentioned earlier, previous researchers have identified a lack of trust as a factor in their acceptance model. Similarly, the findings from the present research indicate a lack of trust amongst Saudi users, as it was a

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
	Alateyah et al., 2013); Alsaif, 2013; Albesher, 2016).	the general population. According to the above, the majority of the older generation in Saudi Arabia have trust issues connected with Internet use for transactions and inputting personal information (see section 6.6.2).	point made by the interviewees. Saudi users are constantly afraid that their personal information will be misused. The Saudi government must take this issue into account, providing solid and ongoing reassurance that personal data will be safe, especially where older users are concerned (see section 7.6.2).
City Size	Not found in the Saudi context	The present research identifies a significant factor influencing the development and adoption of e-government, namely the size of the city concerned. City size was also found to affect reforms to e-service performance, aimed at enhancing productivity and providing high quality services for users (see section 6.6.3).	The present research indicates that only the larger branches of Saudi Arabia's Ministries have e-government systems, but reforms should also include Saudi Arabia's smaller cities, if e-government development and adoption are to be successful. Moreover, it must be clearly understood by Ministry decision-makers that e-government will be adopted across the entire Kingdom. At present, smaller cities in Saudi Arabia offer

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
			fewer e-services (see section 7.6.3).
User Attitudes	Not found in the Saudi context	The present research identifies user attitude as a social factor influencing the effective development and adoption of e-government. User attitude is an important finding, also considered very important by the interviewees in the present study, due to diverse components of culture and behaviour (see section 6.6.4).	The present research acknowledges that user attitude represents a major influential social factor. It is particularly important in relation to Saudi Arabia's Ministries, especially those that have undergone rapid expansion. This is due to the personal relevance or otherwise of the development and adoption of e-government, from the users' perspective (see section 7.6.4).
Familiarity with the Use of E-Services	Alsaghier (2010) identifies familiarity with the use of e-government as being a factor of influence on trust in e-government and therefore its adoption.	This research identifies the user's perspective of familiarity with e-services and the effect of this on e-service usage. It is revealed as an important factor for decision-makers to consider (see section 6.6.5)	Familiarity with the use of e-services may be understood in many different ways, but it was revealed by the interviewees as an influential factor to be considered. This finding was then compared with discussions of this topic drawn from the Literature Review (see section 7.6.5).

Factors	Existing Studies in Saudi Arabia	Study Findings	Clarification
Availability of E-Services	Al-Sobhi and Weerakkody (2010) identify the availability of e-government as being intermediary in Medina, Saudi Arabia.	This research identifies the availability of e-services as the number of transactions provided by the Ministries to the user and emphasises how these need to be extensively available (see section 6.6.6).	E-Service availability was found to be a vital factor, indicating the user's demand for such electronic transactions. This finding was based on the Literature Review related to the present research findings, thus revealing a factor of influence (see section 7.6.6).
The Actual Beneficiaries of E-Government Services	Not found in the Saudi context	This research identifies several signs indicating the importance of users being made aware of the benefits of e-government services (see section 6.6.7).	In this research, several benefits were discussed, identified in the literature and presented in the research findings from the user's perspective (see section 7.6.7).
Extension of E-Government Services	Not found in the Saudi context	The present research identifies the need and demand for e-government services to be extended (see section 6.6.8).	The extension of e-government transactions was discussed in relation to the Literature Review and current research findings (see section 7.6.8).

8.8 Summary

This chapter has presented a design for a conceptual framework, identifying and discussing the critical factors affecting the development and adoption of e-government, as derived from Chapter Seven. Here, the findings were merged to highlight the most significant results pertaining to the development, implementation and adoption of e-government. Moreover, this chapter specifies how the conceptual framework should be applied to such a development process. In addition, some understanding of the development and adoption of e-government within the Saudi administration and its Ministries was gained, especially regarding decision-making. This was drawn from Chapter Seven and its discussion of the research findings, with the critical factors influencing the development and adoption of e-government also being highlighted.

This chapter therefore presents the framework designed in this research (see Figure 8.1) and explains how the different factors were coded from the emerging themes (see Table 6.1). Moreover, it presents a summary of the Literature Review, alongside the research findings from the current study (see Table 8.1). In the next chapter, conclusions will be drawn from this research and recommendations made for further work. Moreover, answers will be provided to the research questions and the study's contribution to knowledge explained.

Chapter 9: Recommendations and Conclusion

9.1 Introduction to the Concluding Chapter

Previous chapters have presented the research aims and objectives; research questions; research motivation; Literature Review; theoretical basis; research methodology; research findings and discussion, and analysis of the qualitative data, thus identifying the critical factors influencing development, implementation and adoption of e-government in the context of Saudi Arabia. As a result, a conceptual framework for this development has been formulated. In the selected context, e-government has received substantial attention from government organisations, as well as in business and public sectors. In the current study, therefore, the critical factors of such development and implementation are explored, looking realistically at how they can be played out in the context of Saudi Arabia. This concluding chapter makes some final points, with answers to the research questions and a description of the contribution and limitations of the research, with recommendations for future work.

9.2 Resolving the Research Questions

The main research aim was to design, propose and present a framework for developing and implementing an e-government system in Saudi Arabia; identifying the critical factors influencing the development of e-government across Saudi Arabia's Ministries, with a view to benefiting the public and businesses alike. In this regard, the priority was to answer the main research question:

> ***What are the most important factors that impact on the development of an e-government system in Saudi Arabia context?***

This research has sought to identify and then investigate the critical factors affecting e-government systems in general and then specifically in the Saudi context, examining these in relation to the conceptual framework designed, and the development and adoption of e-government in the context. It has achieved this by identifying the relationship between these critical factors and their influence on e-government implementation, following an analysis of data collected in a qualitative approach. In these qualitative data, four main critical factors were apprehended: technological,

organisational, environmental and social, analysed in Chapter Six of this thesis and discussed in Chapter Seven (see especially, sections 7.3-7.6 and the corresponding sub-sections). As a result, a series of sub-questions were formulated to help answer the main research question, as follows:

Why Saudi Arabia?

In response to the above question, the current research has described the main elements making up KSA, such as its culture, location, size, regime, economy and population (see sections 2.2-2.4).

What is the definition of e-government?

This research presents definitions of e-government in Chapter Three (more specifically, section 3.3).

What are the perspectives of senior IT managers in Saudi Arabia's government Ministries?

The perspective of senior IT managers has personated on four contexts which presented on chapter six sections 6.3 – 6.6, 6.1, 6.6.2, 6.6.3, and 6.6.4..

What are the perspectives of users in Saudi Arabia's public sector about the e-government?

The researcher conducted the second level of data with the Saudi user to examine and identified their perception pf e-government services that provide from the Saudi ministries, the user perspective has presented on the social context chapter six section 6.6 – 6.6.8.

This research has produced significant findings for the effect of technological, organisational, environmental and social factors on the development and adoption of e-government systems (see Chapters Six and Seven and the formulation of the conceptual framework in Chapter Eight). Figure 8.1 illustrates this framework, designed to facilitate decision-making concerning e-government at Ministry level in Saudi Arabia. Based on an analysis of the critical factors identified, links were established with sub-factors, as represented in the abovementioned Figure. It was then explained how the

main factors led to these sub-factors, with a summary of each critical factor being compared with the existing literature in the Saudi context (see Chapter Eight, especially section 8.4 and Table 8.1).

In addition to the above, one benefit emerging from the proposed conceptual framework is that it reveals a direct relationship between technological, organisational, environmental and social factors in the Saudi Arabia context, thus indicating how the Saudi mind-set can be influenced to accept e-government. In these terms, several concrete issues emerged; for example, the need for an adequate ICT infrastructure, which refers to the technological factor (e-system, network, applications and tools), ICT strategy (vision, planning and funding), and an ICT integration system. The organisational factors identified involve senior management, organisational attitudes, data-sharing, and change management (especially BPR and staff training). On the other hand, the relevant environmental factors indicate policies (rules) and the cultural environment, while the social factors in this instance are characterised by a lack of awareness, lack of trust, city size and user attitude.

9.3 Research Contribution

With regard to studies on e-government systems, the present research makes both a theoretical and core contribution to the following areas of knowledge:

The contribution made by this thesis to existing knowledge is its exploration of the four main contexts incorporated in the TOE Framework, placed in the setting of Saudi Arabia. These components of TOE are technological, organisational, environmental and social. To the author's knowledge, this is the first study to studied e-government that based in the TOE framework in Saudi Arabia context. Moreover, the purpose of doing so was to advance current understanding of the critical factors of e-government development and adoption. In terms of development, this thesis seeks to enhance the way in which decision-makers at Saudi Arabia's Ministries plan e-government innovation. As a result, it is anticipated that more informed decision-making will ensure a more feasible and successful outcome. The review of the relevant literature for this study helped the primary areas for consideration in this regard, revealing the knowledge

gap and highlighting areas of highest importance, namely technological, organisational, environmental and social aspects of e-government implementation.

9.3.1 Theoretical Contribution

1. Chapter Three of this thesis presents a broad view of the relevant literature, identifying a number of critical factors from previous studies, which have been found to influence e-government. In the literature reviewed in Chapter Four, a framework was proposed as a basis for introducing and developing e-government. The theoretical basis of this was the TOE Framework, out of which the critical factors for consideration in e-government implementation were drawn, as revealed in Chapter Four, sections 4.4-4.7. This is later elaborated on in Chapter Six (especially sections 6.3-6.6).
2. Another contribution of the research is an exploration of how the above-mentioned critical factors impact the development and adoption of e-government across four layers of implementation: governmental, business sector, user, and government employee.
3. The final contribution of the present research to existing knowledge in the relevant field consists of 25 factors and sub-factors that influence the development and adoption of e-government. These are illustrated in detail in Chapter Eight (Table 8.1).

9.3.2 Core Contribution

1. The research novelty in this instance is the formulation of a conceptual framework (Figure 8.1), based on the critical factors identified through data collection, analysis and discussion (Chapters Five, Six and Seven). This proposed framework is intended to help develop an e-government system throughout Saudi Arabia's Ministries, organisations, businesses and public sector bodies, in order to ensure integration between them and between the business and public sectors. The outcome of this is expected to be improved service delivery, especially of e-services. In addition, this research examined the perspectives of senior government IT managers, identifying the relevant critical factors influencing the development and adoption of e-government. It also

gathered the perspectives of e-service users. The findings reveal the significant impact of technological, organisational, environmental and social factors on the development, acceptance and use of e-government, as presented from the point of view of government employees and members of the Saudi public.

2. The majority of previous studies conducted in recent years have been on adoption and trust in the social layer of implementation (users) (Al-Fakhri et al., 2008; Alfarraj et al., 2012; Alshehri et al., 2012). This current research is therefore the first thesis to examine four critical factors (technological, organisational, environmental and social) and their influence on the development of e-government, applying qualitative data analysis to produce themes (thematic analysis).
3. This study contributes to e-government research by investigating novel factors that influence the development and adoption of e-government in the Saudi context. Previous studies have limited their focus to the public and business layers, such as Alateyah et al. (2013, 2014), Alghamdi et al. (2014) and Bakry et al. (2016). Therefore, this research makes a unique contribution to the development and adoption of e-government in Saudi Arabia by including the perspectives of government employees and members of the public likely to use these services.
4. Based on the outcomes of this research and the aforementioned contributions, important perceptions, perspectives and insights into the development and adoption of e-government in developing countries are provided; more specifically in Saudi Arabia. In this regard, the proposed conceptual framework will be helpful for decision-makers engaged with Prince Mohammed Bin Salman's announced Saudi Vision 2013, which is planned to take the country forward.

9.4 Research Limitations

Nevertheless, despite the contribution made to the existing literature, several limitations were identified in this research, largely due to problems encountered when collecting the data. Firstly, as described in Chapter Five, interviews with senior IT staff at Saudi Ministries were planned for data collection, but this became a long drawn-out process,

while the researcher attempted to form connections with Ministry employees to request and secure their participation. This was then exacerbated by the restrictive bureaucratic processes imposed by government bodies where research is concerned, which presented further hindrances. It also raised questions about the feasibility of the proposed conceptual framework in the context of Saudi e-government, given the problem of accessibility. Therefore, the researcher obtained a supporting letter from his supervision team in De Montfort University, which was then sent to the Saudi Ministries concerned, briefly outlining the aims and nature of the research, and the potential benefits for the government and Saudi citizens through their participation.

Secondly, several of the participants hesitated to answer any interview questions that may have implied criticism of the government's role in the development of e-government. When this barrier was encountered, the researcher (interviewer) immediately adapted the question. As a result, however, these interviews with senior IT managers within Saudi Arabia's Ministries failed to gather all the information required and planned for the research. It is at present an inevitable drawback of attempting to collect data from government employees, where there is a high level of security and confidentiality. This represents a significant research limitation.

Aside from the above, the outcomes of this research cannot be extended to other facets of the research context or elsewhere, as they are limited to just four government Ministries in Saudi Arabia. Further work could be carried out amongst lower-level IT staff and in other Ministries or departments where e-government is regularly used for everyday procedures. This would extend the investigation to other levels of personnel and areas of activity.

Finally, the data gathered was all in Arabic, given that this was the mother tongue of all the respondents. However, the research needed to be presented in English for presentation as a thesis produced at De Montfort University. Great care and a substantial amount of time was thus devoted to the process of translation, in order to avoid any meaning being lost, which placed further pressure on the time constraints.

9.5 Recommendations for Future Research

There is no doubt that on every front, this study affords scope for further research, in the light of the limitations explained above and also due to the relatively uncharted territory of the context. It must also be borne in mind that the public sector still lacks the transparency which has become obligatory in the developed world and so the whole issue of gathering information tends to elicit suspicion, with an ensuing reluctance to cooperate in many quarters. Nevertheless, it is the present researcher's opinion that gradual inroads into such study areas in Saudi Arabia will eventually pave the way towards a solid body of research, resulting in change and development across sectors. Moreover, certain alternative directions could be taken for further work.

1. The problems faced in attempts to develop an e-government system in Saudi Arabia were identified by the researcher from the literature and through just one set of interviews across a limited sample, as mentioned in chapter five the data gathered from two level senior IT managers within Saudi ministries and Saudi user, the sample could be more wider to be conduct with other management level in the Saudi ministries. In the user data could be more deductive data collections to examine and explore more detail about the e-government services. Therefore, the author of this critique suggests a future exploration of these problems, in order to try and discover more of the hurdles to the development and adoption of e-government in the context.
2. The TOE Framework is proposed in Chapter Four of this thesis as being of potential benefit for the development and adoption of e-government. This theoretical framework is comprised of four critical factors. However, there needs to be further investigation of developmental elements inclusive of culture and trust, as it is these which appear from the present study to most strongly impact government and user intention with regard to the development and adoption of e-government in Saudi Arabia.

9.6 Summary

This thesis concentrates on four Saudi Ministries and a sample of the Saudi population, in relation to the development of an e-government system. The significant critical

factors for such development in Saudi Arabia are identified in the groundwork of this critique and should assist in constructing a conceptual framework for the introduction and integration of e-government in Saudi Arabia. This is a process that should be evaluated in the light of the proposed framework. Future research could therefore be continued by applying the findings from the current study, for the sake of both academic and pragmatic development. In fact, the research studies already carried out on the subject of developing and adopting e-government in Saudi Arabia have pointed to the need for further work in this area. This is due to the problematic and time-consuming nature of executing projects in the selected context. As a result, only short-term projects have been made possible so far. The development of a deeper understanding of how mechanisms of comprehensive e-government can be developed here and should therefore be viewed in future studies.

This research has formulated and presented a conceptual framework, discussed in its broader aspects and delineated in its primary aim of proposing a comprehensive conceptual framework, based on critical factors identified for such development in Saudi Arabia. These factors are considered to be of paramount importance for e-government, at government level as well as for the business and public sectors. This research has therefore reviewed the relevant literature, as can be seen in Chapter Three; presenting a detailed definition of e-government; ICT growth; classifications of e-government models; e-government model implementation; examples of successful e-government systems in the real world, and the relevant theoretical background. In Chapter Four, TOE framework that this research based on the critical factors of four context TOE-S were drawn from a review of the literature, namely technological, organisational, environmental and social TOE-S context. The study data were collected from IT personnel from selected Saudi Government Ministries and referred to their perceptions of e-government, moreover, the data were also collected from Saudi Arabia's use presented and referred to their perceptions on the e-government. In Chapter Six, the qualitative interviews conducted with Saudi Arabia IT governmental manager and user's representatives were analysed using thematic analysis to determine the most important themes. These were then discussed in detail and evaluated, before setting out the main research findings in Chapter Seven. Chapter Eight subsequently presented the theoretical design for a conceptual framework, taking into account how it

could be practically and methodically applied to aid decision-makers in Saudi Arabia. In addition, new factors were identified, making comparisons with the Literature Review as regards influences on the development and adoption of an e-government system in the Saudi context. In the final conclusion, the main research question and sub-questions were answered in this thesis and the findings integrated into a conceptual implementation framework.

9.7 Reflection

I, the researcher, was offered a place on a PhD in Information Systems at the centre for computing and social responsibility (CCSR) Group in the School of Computer Science and Informatics in De Montfort University. In partial fulfilment of the criteria for the PhD candidature, each year I attended an Annual Review Meeting (ARM) to assist as PhD student in preparing for assessment by an independent assessor. The independent assessor must be a member of the School's academic staff and qualified to supervise, having attended the Certificate in Research Supervision (CRS). Progression to the ARM is dependent on submitting an annual report to the Graduate School Office for processing. During the first year of my candidature, I reviewed the existing literature and designed the research methods for data collection. In association with this, a procedure for obtaining approval for ethical research is stipulated by the Faculty Human Research Ethics Committee (FHREC), corresponding to research that involves more than minimal risk. Such research is conducted on humans and involves the collection of human data (see Appendix I).

In the second year, my first supervisor Dr Sara H. Wilford provided me two letters one for the Saudi Ministries to conduct the interview, second to public sector for the citizen participants, therefore, I conducted my primary data collection with Saudi senior IT managers in Saudi Ministries and with Saudi citizens in Saudi Arabia. First the interviews with senior IT managers took place within Saudi Ministries and obtained a response from four (see section 5.9). It was an ideal opportunity to interview such experts from the field of IT at government level. Moreover, I conducted interviews with members of the Saudi public and met interesting people, while at the same time gathering their opinions.

After collecting my primary data, I returned to the university and with the help of my supervision team Dr, Sara and Dr. Ben, I analysed my data and wrote up the first draft of the thesis, which I then presented to my supervision team for feedback and comments. I used this advice from the supervision team to complete the final draft. Within the period of preparing this thesis, I also completed articles and submitted them to a journal for publication. By the end of the PhD programme, I realised what a unique and rewarding opportunity I had been given and felt fortunate to have learned new research skills. I had acquired these over the period of my PhD on various training courses relating to my research such as (Beginning to Teach in Higher Education, Preparing for Your Viva, Advanced NVivo For Qualitative Data Analysis, Introduction to NVivo For Qualitative Data Analysis, Intermediate Quantitative Data Analysis Using SPSS/PASW, Introduction to Quantitative Data Analysis Using SPSS/PASW, Structuring and Completing your Thesis, Presenting your Research to An Audience, Writing Skills, Publishing Research Findings, Research Methods: Technology/EMTERC, Intellectual Property Rights and Ethics, Planning and Managing Research, Research Student Induction Event, Literature Searching and Reference Management). Moreover, the programme had brought me into contact with academic staff, who supervised my study and I learned a great deal from them. This interaction with my supervisors, as well as the responses from the interview samples enabled me to explore many different ideas, opinions and concepts.

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List of Appendixes

Appendix A: Information to the Interview's Participants (English Language)

De Montfort University
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The Development of E-Government Systems in the Kingdom of Saudi Arabia

Dear participants,

I am a PhD Candidate in Information Technology (E-government systems), under supervisor team Dr. Sara Helen Wilford, Dr Ben Fairweather & Professor Fionn Murtagh at De Montfort University Leicester, United Kingdom. As a part of my research requirements, interviews are to be carried out with senior IT Staff in several ministries and government organisations. In order to investigate and review the problems or obstacles which may face the adoption a new e-government system development framework for the provision of solutions in the development of an e-government system in Saudi Arabia, your participation will help and contribute to the development of electronic transactions, provided by the Saudi government for the public sector (for both citizens and businesses), other government organisations and government employees.

Your participation in this interview is very important in terms of analysis and proposals, so your commitment is highly appreciated. For ethical aspect, all data you provide will be used purely for this research and will not be applied or transmitted outside the scope of the study. It will be kept confidential. You clearly have right to end your participation at any time during the interview stage.

Yours faithfully,

Fahad Naser ALQahtani

PhD candidature

De Montfort University, Faculty of Technology, School of Computer Science and Informatics, Leicester, United Kingdom, Email address: p07013807@myemail.dmu.ac.uk

Appendix B: The consent form (English Language)

De Montfort University
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Thesis Title: Identifying the Critical Factors that Impact on Development the Electronic Government System: A Thematic Analysis and Comprehensive conceptual Framework

The researcher Name: Fahad ALQahtani at CCSR Group, School of computer science and Informatics, De Montfort University.

I have read and understand the attached participation information sheet and I signing below I consent to participate in the study.

I understand that I have the right to withdraw from the study without giving a reason at any time during the study.

Participant's signature:	Researcher's signature:
Participant's name:	Research's name: Fahad ALQahtani

Appendix C: Senior IT managers' Interview Questions (English Language)

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E-Government Systems in the Kingdom of Saudi Arabia

E-government: The use of information technology to enable and improve the efficiency with which government services are provided to citizens, businesses, employees and agencies. (Carter & Belanger, 2005, p. 5).

Open-Ended Interview Questions

1. Do you have an e-government system? If yes, which kind of services do you provide? Explain please.
2. What is the Kingdom Saudi Arabia government's vision and plan of ICT development in your department?
3. Are you launching e-government initiatives as per a properly devised action plan? Could I please have a copy of them? Explain please.
4. What kind of problems potentially occurs in implementing e-government?
5. In e-government context, what are the technologies and tools that you use by your establishment in order to e-services development? Please specify the version.
6. How strong is the network that use in connectivity with e-government system?
7. To what extent is there benefit from the e-government tool that links governmental organisations?
8. How are the departments linked together? Explain please.
9. Do you have specific procedures in place? Explain please.
10. What do you think are the main problems facing e-government adoption in public services?
11. Is there easy transfer and sharing of available information between departments and government organisations? Explain please.

12. Is there a technique being utilised to assist the sharing and transfer of information amongst government organisations? Explain please.
13. Are public organisations willing to develop key measures they have taken such as Business Process Re-engineering (BPR) to enable the adoption of e-government? Explain please.
14. With regard to dedication, are senior managers capable enough to be leaders in e-government system development in their department? Please explain.
15. Do you offer any kind of ICT training?
16. Could you provide a brief description of the organisational structure for IT section in your organisation?
17. Do you think e-government initiatives are being impacted through politics in any way? Explain please.
18. How will the project initiatives be funded? (meant: What is procedure for a new projects)
19. Are there any training schemes available for staff to implement e-government? Please explain.
20. To what extent is there investment in ICT?
21. Is process of adopting e-government facilitated? Explain please.
22. Is there any control over the development of e-government? Please explain.
23. Finally, in your opinion, what are the barriers or obstacles facing the development of e-government?

Thanks

Appendix D: Information to the Interview's Participants (Arabic Language)

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تطوير انظمة الحكومة الإلكترونية في المملكة العربية السعودية

أعزائي المشاركين

أنا طالب مبتعث لدراسة الدكتوراه في تطوير أنظمة الحكومة الإلكترونية في المملكة العربية السعودية في المملكة المتحدة. وكجزء من متطلبات بحث الدكتوراه هو إجراء مقابلات مع كبار موظفي قسم تقنية المعلومات في الوزارات والهيئات التابعة للدولة. لإجاد الوسيلة الامثل لحل المشاكل التي تواجه تطوير الحكومة الإلكترونية في المملكة العربية السعودية وتساعدني في إثبات مقترحي في هذا البحث الذي من خلاله سوف يسهم في تطوير التعاملات الإلكترونية المقدمة من الحكومة السعودية لقطاع الأفراد والأعمال وكذألك بين القطاعات الحكومية كإدارات وأقسام فيما بينها، وموظفين هذه الوزارات والقطاعات كذألك.

مقدر تماماً مشاركتكم في هذا المقابلة لما لها من أهمية في هذا البحث من الناحية التحليلية لإجاد المقترحات المناسبة واللازمة. كذلك أحب ان أأكد ان جميع البيانات المقدمة ستكون قيد والسرية والكتمان ولن تستخدم خارج نطاق هذا البحث، ومن أخلاقيات البحث العلمي لك حرية الانسحاب من المقابلة في أي وقت.

مع خالص الود

فهد ناصر القحطاني

تقنية المعلومات

كلية علوم الحاسب الآلي والمعلومات

Appendix E: The consent form (Arabic Language)

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بسم الله الرحمن الرحيم

عنوان الرسالة:

تحديد العوامل الرئيسية التي تؤثر على تطوير أنظام الحكومة الالكترونية من وجهة نظر كبار مديري تكنولوجيا المعلومات الحكومية: دراسة تحليل موضوعي اقتراح إطار عمل شامل

اسم الباحث: فهد القحطاني

لقد قرات وفهمت

لقد قرأت وفهمت ورقة معلومات المشاركة وقع أدناه بالموافقة على المشاركة في هذي الدراسة.

أنا أفهم أن لدي الحق في الانسحاب من المقابلة في أي وقت دون إعطاء سبب.

اسم المشارك

اسم الباحث: فهد القحطاني

توقيع المشارك

توقيع الباحث

Appendix F: Senior IT managers' Interview Questions (Arabic Language)

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تطوير أنظمة الحكومة الإلكترونية في المملكة العربية السعودية

الحكومة الإلكترونية: هي استخدام تكنولوجيا المعلومات لتمكين وتحسين الخدمات الحكومية المقدمة للمواطنين والموظفين والشركات والوكالات. (كارتر و بيلانجر، 2005، ص. 5).

1. هل لديكم نظام تعاملات الإلكترونية؟ إذا الجواب نعم، أي نوع من الخدمات تقدمون؟ أرجو الشرح.
2. هل يوجد دعم حكومي لتطوير أنظمة تقنية المعلومات والاتصالات في منشئتكم؟ أرجو الشرح.
3. هل إطلاقكم لأنظمة الحكومة الإلكترونية وضعت وفقاً لرؤيا ولخطة عمل بشكل صحيح؟ أرجو الشرح؟ هل بالإمكان تزويدي بنسخة من هذه الخطة؟
4. ماهي نوع المصاعب والتحديات (التقنية) التي من المحتمل أن تحدث عند تنفيذ الحكومة الإلكترونية؟
5. ماهي الأدوات والتكنولوجيا المستخدمة في تقديم التعاملات الإلكترونية التي تدعم الحكومة الإلكترونية؟ (الرجاء ذكر اسم التقنية او الأداة مع رقم الاصدار)
6. ما مدى قوة الشبكة المستخدمة لديكم حالياُ التي تربط انظمة الحكومة الإلكترونية مع بعضها البعض؟
7. إلى أي مدى هناك فائدة من أدوات التعاملات الإلكترونية التي تربط بين الأقسام وإدارات الدولة؟
8. كيف يتم ربط الإدارات والأقسام مع بعضها البعض؟ أرجو الشرح.
9. هل لديكم إجراءات محددة (معينة) بخصوص تقنية "التعاملات الإلكترونية" في مكان العمل؟ أرجو الشرح.
10. ماهي المشاكل الرئيسية التي تواجه اعتماد الحكومة الإلكترونية "التعاملات الإلكترونية" في الخدمات العمومية باعتقادك؟
11. هل يوجد سهولة في نقل ومشاركة المعلومات والبيانات المتاحة بين الإدارات والقطاعات الحكومية الأخرى؟ أرجو الشرح.
12. هل يوجد لديكم تقنية معينة تستخدمونها للمساعدة في نقل ومشاركة المعلومات بين القطاعات الحكومية/ "الإدارات"؟ ارجوا ذكرها بالتفصيل.
13. هل المؤسسات الحكومية في القطاع العام (Public Sector) على استعداد لوضع تدابير تطويرية مثل إعادة هندسة الأعمال (هندرة) لتمكين اعتماد الحكومة الإلكترونية؟ أرجو الشرح.ملاحظة: (هندرة): هو نهج يهدف الي تحسين سير العمل عن طريق رفع فعالية وكفاءة العمليات المتبعة داخل المنظمات.
14. هل كبار المدراء لديهم القدرة على قيادة تطويرأنظمة الحكومة الإلكترونية في إداراتهم؟ ارجو الشرح.

15. هل تقدمون أي نوع من أنواع التدريب في تقنية المعلومات والاتصالات؟
16. أرجو أن تقوم بوصف مختصر للهيكل التنظيمي (لإدارة/ لقطاع) تقنية المعلومات في منشئتكم؟
17. هل استخدام التعاملات الحكومية تخدم السياسة بشكل او بأخر؟
18. كيف يكون تمويل مشروع تطوير الحكومة الإلكترونية؟ المقصود: ماهي الإجراءات المتبعة عند اعتماد مشروع جديد؟
19. هل يوجد خطط تدريب متوفرة للموظفين على تنفيذ الحكومة الإلكترونية؟ أرجو الشرح.
20. إلى أي مدى هناك استثمار في تكنولوجيا المعلومات والاتصالات في قسمكم؟
21. هل هناك تسهيلات في عملية اعتماد الحكومة الإلكترونية؟ أرجو الشرح.
22. هل تنفيذ الحكومة الإلكترونية يخضع إلى أي سيطرة؟ ارجو الشرح.
23. وفي الختام من رأيك الشخصي ماهي العوائق و العقبات التنظيمية أو الإدارية التي تواجهكم في تنفيذ الحكومة الإلكترونية؟

مع الشكر و التقدير لمشاركتكم

Appendix G: Users' Interview Questions (English Language)

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Research Interview Questions Guide for citizen's users for the electronic government services in the Kingdom of Saudi Arabia

1. What do you know about e-government services?
2. What is your experience with ministries websites transactions?
3. How the e-government services respond with your transactions?
4. What is your experience with doing search to find information in ministries websites?
5. What is your experience with participating among the government ministries websites and e-services in one transaction?
6. How e-government changed you lifestyle with government services?
7. What the value of e-government services?
8. How would you assess the quality of electronic services within Saudi ministries?
9. How the Saudi government can improve the e-government system within Saudi ministries and their local authority?
10. How the e-services are connected with other government authorities?
11. What is your experience with problems that face the e-government services success?

Appendix H: Saudi Users' Interview Questions (Arabic Language)

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تطوير أنظمة الحكومة الإلكترونية في المملكة العربية السعودية

الحكومة الإلكترونية: هي استخدام تكنولوجيا المعلومات لتمكين وتحسين الخدمات الحكومية المقدمة للمواطنين والموظفين والشركات والوكالات. (كارتر و بيلانجر، 2005، ص. 5).

1. ماذا تعرف عن الخدمات الحكومة الإلكترونية؟
2. ما هي تجربتك مع مواقع الوزارات المعاملات الإلكترونية؟
3. كيف هي استجابة الخدمات الحكومة الإلكترونية مع معاملاتك؟
4. ما هي تجربتك بالبحث والعثور على المعلومات في مواقع الوزارات؟
5. ما هي تجربتك مع المشاركة بين مواقع الوزارات الحكومية والخدمات الإلكترونية في صفقة واحدة؟
6. كيف غيرت لك الخدمات الإلكترونية نمط الحياة ؟
7. ما هي القيمة والاهميه للخدمات الحكومة الإلكترونية؟
8. كيف تقيم جودة الخدمات الإلكترونية داخل الوزارات السعودية؟
9. كيف يمكن للحكومة السعودية تحسين نظام الحكومة الإلكترونية داخل الوزارات السعودية وسلطاتها المحلية؟
10. - كيف ترتبط الخدمات الإلكترونية بالسلطات الحكومية الأخرى؟
11. ما هي تجربتك مع المشاكل التي تواجه نجاح خدمات الحكومة الإلكترونية؟

Appendix I: Ethics Application Approval

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LEICESTER

Fahad Alqahtani <p07013807@myemail.dmu.ac.uk>

RE: Research Ethics Application - Fahad Naser Al-Qahtani 1011/059

Anne Smith <AmSmith@dmu.ac.uk> 4 October 2012 at 16:02
To: Fahad Alqahtani <p07013807@myemail.dmu.ac.uk>
Cc: Research Students <researchstudents@dmu.ac.uk>

Dear Fahad

Research Title: The Development of E-Government Systems in Kingdom of Saudi Arabia

Your application to gain ethical approval for research degree activities has been considered and APPROVED by the Faculty Human Research Ethics Committee (FHREC). No further issues were raised by the committee.

Please be aware that changes to the project plan or unforeseen circumstances may raise ethical issues. If this is the case it is the researcher's duty to repeat the ethics approval process.

Kind regards

Anne

Anne Smith

Research Co-ordinator

Research & Innovation Office

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